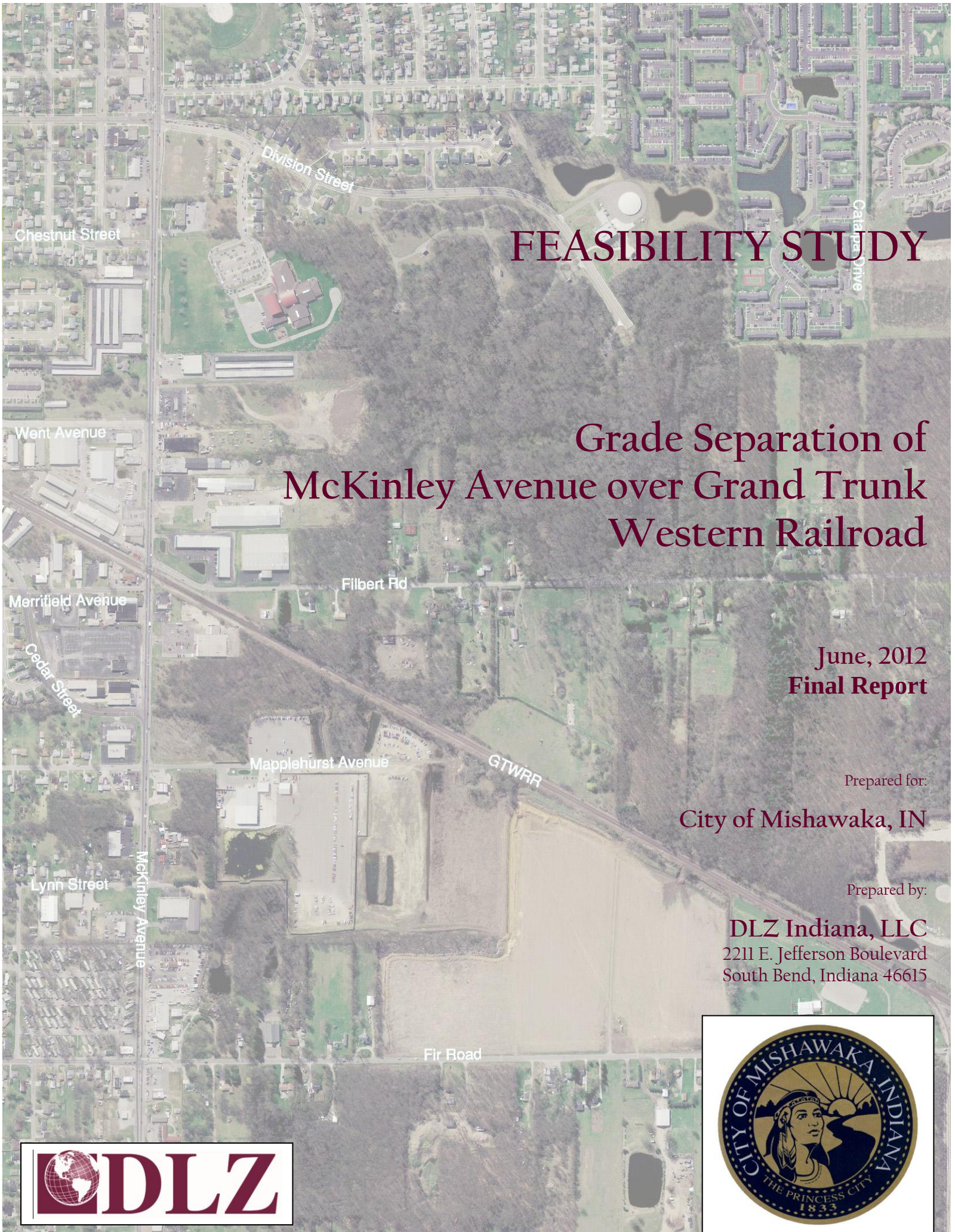

FEASIBILITY STUDY

Grade Separation of McKinley Avenue over Grand Trunk Western Railroad

June, 2012
Final Report

Prepared for:

City of Mishawaka, IN

Prepared by:

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APPENDICES

Executive Summary

The purpose of this study is to examine the feasibility of constructing a grade separation at McKinley Avenue and the Grand Trunk Western Railroad track. The study will consider two grade separation options: an overpass and an underpass.

The limits of the study will be along McKinley Avenue from Division Street to approximately 400 feet east of Maplehurst Avenue. This will extend the current 5-lane section of McKinley Avenue east from Division Street to Maplehurst Avenue. Other local roads that will be immediately impacted to varying degrees include: Cedar Street, Filbert Road, Merrifield Avenue, and Went Avenue. Due to the traffic routing patterns that will be impacted by construction of the grade separation on McKinley Avenue, additional improvements to Division Street and Catalpa Drive are also being considered.

Currently, the section of McKinley Avenue east of Division Street is a two lane asphalt roadway with 12-foot lanes and paved shoulders varying from 8 feet to 12 feet. The current zoning is a mix of residential, commercial and industrial. The land use is composed primarily of commercial and industrial with a small amount of residential, undeveloped and forested land as well.

A Red Flag Survey was conducted. Items evaluated in the Red Flag Survey include infrastructure, water resources and hazardous materials. The Red Flag Survey uncovered several areas of impact that will need to be considered as the proposed grade separation moves further into the design phase, however nothing that would be considered a “fatal flaw” that could entirely de-rail the project.

The proposed McKinley Avenue typical section is composed of two 12-foot lanes in each direction and a 12-foot center two-way left turn lane for a total of five lanes. A 5-foot sidewalk will be located on both sides of the roadway, with a 5-foot buffer strip between the curb and sidewalk.

The alignment alternatives for McKinley Avenue include a grade separation that would involve either an overpass or an underpass. The following alignment alternates were considered as part of this study:

- Underpass – North Shift
- Underpass – South Shift
- Overpass – North Shift
- Overpass – South Shift

The process of investigating the feasibility of the overpass and underpass grade separation options identified three factors that largely influenced the selection of a preferred alternate: project costs, existing groundwater elevation, and right of way impacts. Based on these factors, it is recommended that the overpass grade separation is a more feasible alternative than an underpass. At this time, a recommendation as to a north or south shift in the alignment will not be made. The City of Mishawaka and St. Joseph County have elected to present the findings of this report at a public information meeting. It is recommended that the public feedback from this meeting, along with information presented in this report concerning construction costs, right of way impacts, and local access road options be considered prior to a final preferred alternate selection.

1.0 Introduction

The City of Mishawaka wishes to study the feasibility of constructing a grade separation between McKinley Avenue and the Grand Trunk Western Railroad track. The study will consider two alternatives: an overpass and an underpass.

The purpose of this study is to examine feasible alternates of McKinley Avenue crossing over or under the Grand Trunk Western Railroad tracks and arrive at an order-of-magnitude opinion of probable cost for the project. This will include proposed alignments of the roads impacted, proposed structure alternates, proposed grade separation alignments, storm water drainage, utility relocation including sanitary and water relocations, railroad coordination, geotechnical investigation, investigating maintenance of traffic for vehicular and rail traffic, and potential right of way impacts.

2.0 General Description of Existing Conditions

Currently, McKinley Avenue is a two lane roadway with 12-foot lanes and paved shoulders varying from 8 feet to 12 feet. West of Division Street, the roadway section expands to a curbed five-lane section including a center two-way left turn lane (TWLTL). East of the Railroad crossing the existing roadway maintains the 2-lane with paved shoulder section for approximately 1.25 miles to Elder Road where it expands to a five-lane curbed section. Sidewalks through the study limits are mostly non-existent except for approximately 1,300 feet along north side of McKinley Avenue east of Division Street.

Figure 1 – Existing McKinley Avenue looking west

Figure 2 - Existing Railroad looking north

The existing at-grade crossing with the Grand Trunk Western Railroad tracks consists of two sets of railroad tracks crossing at an approximate skew angle of 26 degrees from perpendicular. There is also a railroad crossover switch located approximately 250 feet north of McKinley Avenue,

which includes a natural gas heating device to keep the switch from freezing in the winter.

The current zoning for this study area is a mix of residential, commercial and industrial. The land use in the area is composed primarily of commercial and industrial with a small amount of residential, undeveloped and forested land as well. See **Appendix A** for zoning and land use maps within the study area.

There are two different classifications of soils that the proposed roadway and bridge alignments encounter. These soil types include UgvA (Urban Land, Tyner) and UgaA (Urban Land, Morocco). These soil types are composed mostly of sandy layers. The St. Joseph County Soil Survey is included in **Appendix A**.

Figure 4 - Existing US Spring Fiber Optic Sign

Figure 3 - Existing AT&T Fiber Optic Sign

Utilities within the study limits include phone, electric, fiber optic, water, sanitary sewer and storm sewer. An existing utility map is included in **Appendix A**. Overhead electric lines are located on the north and south sides of McKinley Avenue through the length of the study area as well as along the east side of Filbert Road and Merrifield Avenue. Fiber optic facilities have been indentified overhead and underground in the project area. Zayo Bandwidth has overhead fiber optic facilities located on the electric utility poles along the north side of McKinley Avenue. Fiber optic markers for US Sprint and AT&T are also located along the railroad corridor. AT&T has overhead phone lines located on the electric utility poles along south side of McKinley Avenue. There is also an underground conduit bank along the south side of McKinley Avenue. The conduit bank is approximately 15 inches square and 40 inches deep.

McKinley Avenue has an existing 12-inch water main that runs along the north side of the roadway throughout the study area. This water main is a significant supply line for the City of Mishawaka water distribution system as it also includes a crossing at the Grand Trunk Western Railroad. Multiple cross streets along McKinley Avenue have smaller water mains that connect to the 12-inch water main along McKinley Avenue,

including 6-inch water main connections at both Went Avenue and Cedar Street. There are more significant water main connections both east and west of the Grand Trunk Western Railroad. At Filbert Road, just west of the railroad tracks, a 12-inch water main connection extends north from McKinley Avenue along Filbert Road. East of the railroad tracks there is a 12-inch water main that also extends south along Merrifield Avenue. There are a few 6-inch water service and 6-inch fire protection extensions to north and south off of the 12-inch McKinley water main as well as multiple water services.

There is an existing 10-inch sanitary sewer that flows east along McKinley Avenue from Went Street to Filbert Road. At a manhole at Filbert Road, just west of the railroad tracks, an existing 12-inch gravity sanitary flowing from the north (Filbert Road) and an existing 12-inch gravity sanitary flowing from the south connect to the manhole within McKinley Avenue. The flow then continues east along McKinley in an existing 12-inch gravity sanitary sewer, crossing the Grand Trunk Western Railroad, and flowing into a manhole at Merrifield Avenue. The existing sanitary sewer flow then continues south along Merrifield Avenue in an existing 12-inch sanitary sewer. There is a sanitary sewer extension running north, from the manhole at Merrifield, along the railroad to service an existing building. The sanitary sewer along Went Street flows south from a manhole just south of McKinley Avenue. This sewer includes the flow received from an existing force main south of McKinley that services an existing building on the south side of McKinley just east of Went Street.

Drainage along McKinley Avenue is currently comprised of small roadside swales and low areas that the storm water runoff accumulates and then dissipates via percolation or evaporation. There is an existing storm sewer trunkline through most of the study limits along McKinley Avenue, however there appears to be a limited number of collection points for the storm water runoff being collected in the swales to access the closed system. The existing storm sewer trunkline begins at Went Avenue with a 24-inch pipe and continues east to Filbert Road. At Filbert Road, the trunkline is combined with the Filbert Road trunkline into a 48-inch storm sewer pipe under the railroad to Merrifield Avenue. The storm sewer outfall route continues south along Merrifield Avenue via a 60-inch pipe and then increases to a 66-inch pipe before outleting into an existing ditch south of Stanley Street. East of Merrifield Avenue, the storm sewer trunkline enters the study area with a 36-inch pipe draining to the west. At Lynn Street, the trunkline increases to a 48-inch pipe and it continues to the Merrifield Avenue 60-inch pipe.

3.0 Environmental Considerations

3.1 Red Flag Survey

A Red Flag Survey was conducted, primarily based on an April 24, 2012 review of the information available on the IndianaMap website (http://inmap.indiana.edu/viewer.htm). The limit of this survey was a half-mile Red Flag Survey radius. Items evaluated in the Red Flag Survey include infrastructure, water resources and hazardous materials. The Red Flag Survey uncovered several areas of impact that will need to be considered as the proposed grade separation moves further into the design phase, however nothing would be considered a “fatal flaw” that would entirely de-rail the project. More detailed findings in the Red Flag Survey can be found in **Appendix B**.

3.2 Historic Properties

The National Register of Historic Places, the St. Joseph County Interim Report (2006), and the City of Mishawaka Summary Report to the Indiana Historic Sites and Structures Inventory (1995) were reviewed to identify potentially historic properties in the study limits. Normain Heights Historic District is listed on the National Register of Historic Places. This listed district is located immediately west of the project area. No other properties in the study limits are rated as "notable" or "outstanding" in the interim or summary reports. Therefore, none are considered potentially eligible for listing on the National Register of Historic Places (See **Appendix B** for excerpts from these reports).

An Archaeological Records Review conducted by Pioneer Consulting Services (May 21, 2012) determined that the project area has the potential to contain archaeologic resources and recommended Phase 1A Archaeological Reconnaissance for all previously undisturbed areas (See **Appendix B**).

3.3 Early Coordination

Early Coordination letters and project information were provided to various Federal, State and Local agencies to solicit their comments regarding their respective area of expertise or jurisdictional involvement. The primary concerns identified by those agencies include impacts to the endangered Indiana bat, threatened northern copperbelly water snake and the candidate eastern massasauga rattlesnake, impacts to the forested areas, wetland impacts, and the St. Joseph County Sole Source Aquifer System. More detailed Early Coordination information including agency correspondence is included in **Appendix B**.

3.4 Preliminary Wetland Determination

Preliminary wetland determination services were performed on April 26, 2012 and May 16, 2012. DLZ's intent was to determine if "waters of the U.S." or wetlands are located within the project area based on professional understanding and interpretation of the Corps of Engineers Wetland Delineation Manual (1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0), and Corps of Engineers guidance documents and regulations. The Corps administers Section 404 of the Clean Water Act, which regulates the discharge of fill or dredged material into all "waters of the United States" and is the regulatory authority that will provide the final determination as to the jurisdictional status of the site. In order for an area to be jurisdictional wetland, it must be dominated by wetland plants, contain hydric soils, and have wetland hydrology.

Figure 5 – At Approximate Wetland Location

Preliminary wetland determination services involved the review of the National Wetland Inventory (NWI) Map, the soil survey and a brief field review of the site. The purpose of

this review was to determine if wetlands are present on the site, and if so, their approximate location. Routine wetland delineation was not performed at this time. All wetland location information provided is approximate. Photographs of the identified features are provided in **Appendix B, Figure B-5**.

Field review of the study area identified jurisdictional wetlands and drainage ditches. Routine wetland delineation will be required to determine the exact wetland boundary for permitting purposes. The Corps of Engineers will make final determinations of jurisdictional status of any of the features in the project area. More detailed information regarding the preliminary wetland determination can be found in **Appendix B**.

4.0 General Description of Proposed Roadway

The limits of the grade separation will extend east along McKinley Avenue from Division Street to approximately 400 feet east of Maplehurst Avenue. These improvements will extend the current 5-lane section of McKinley Avenue east from Division Street to Maplehurst Avenue. Other local roads that will be immediately impacted to varying degrees include: Cedar Street, Filbert Road, Merrifield Avenue, and Went Avenue. Additional improvements to Division Street and Catalpa Drive within the project area are being planned by the City, thus these improvements are being considered as well.

4.1 McKinley Avenue – Mainline

The proposed McKinley Avenue typical section is composed of two 12-foot lanes in each direction and a 12-foot center two-way left turn lane, for a total of five lanes. A 5-foot sidewalk will be located on both sides of the roadway, with a 5-foot buffer strip between the curb and sidewalk. In areas of limited right-of-way, the sidewalk may be placed at the back of curb and expanded to a 6-foot walk. Mainline pavement is anticipated to be concrete pavement, due to its maintenance requirements and service life. Typical Sections are included in **Figures 6, 7, and 8** as well as **Appendix C.**

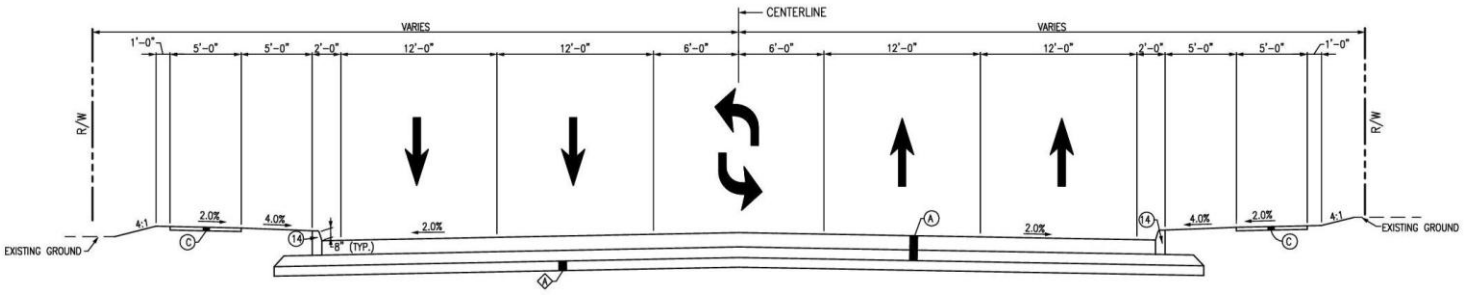


Figure 6 - Proposed McKinley Avenue Typical Section

The typical section for the underpass option will consist of four 12-foot thru lanes and a 16-foot center raised median, to provide area for landscaping and to account for the center bridge pier. A short retaining wall (of no greater than 30-inch height) would be located 3 feet behind the back of the outside curb. Behind the short retaining wall, there will be an 8-foot buffer zone to a 5-foot sidewalk. Behind the sidewalk, there will be a modular block retaining wall, extending from the sidewalk level to the existing ground. Right of way limits are anticipated to extend beyond the modular block retaining wall to

include room for wall tie-backs (if used), as well as excavation at a slope of 1:1. Additional information regarding the retaining walls, barrier rails, and bridge structure can be found under **Section 5.0** of this report.

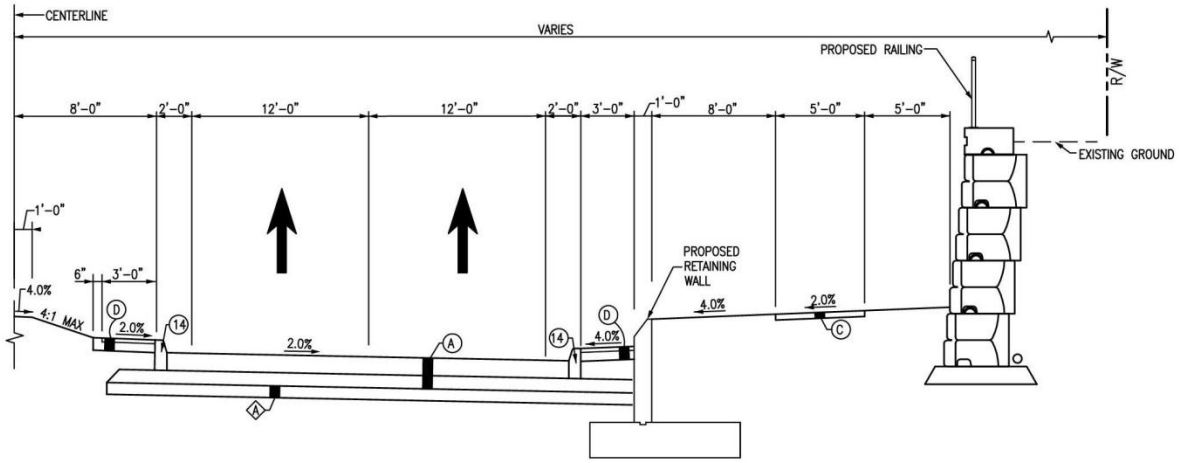


Figure 7 - Proposed Underpass Typical Section (South Side)

Approaching the overpass option, the roadway will transition to be four 12-foot lanes without a median or TWLTL. Outside the thru lanes will be a 4-foot buffer zone to a traffic barrier rail to protect pedestrian traffic. Behind the barrier rail, there will be an 8-foot pedestrian walkway and then a second barrier rail. The overpass option is anticipated to make use of mechanically stabilized earth (MSE) walls rather than fill slopes, which can require a large amount of right of way. The MSE wall is efficient in the fact that the tie-backs extend under the proposed roadway and do not require additional right of way.

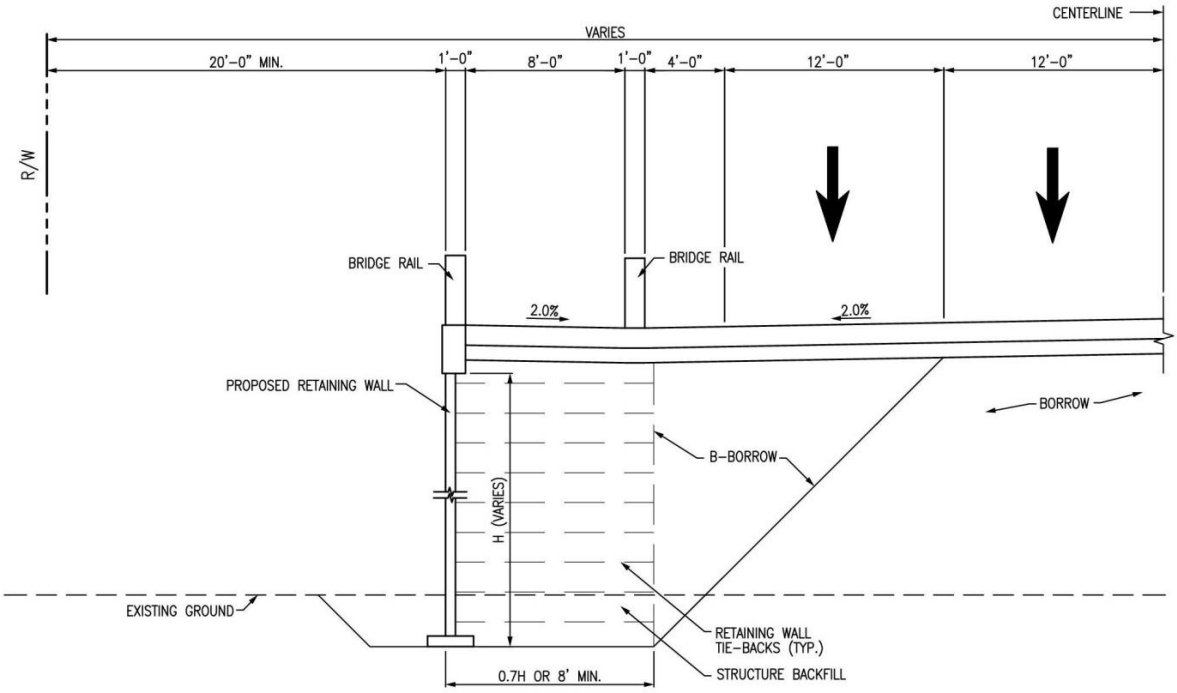


Figure 8 - Proposed Overpass Typical Section (North Side)

The design criteria for McKinley Avenue is based on a 40 mph design speed and can be found in the following **Table 1**. The design criteria is based on "A Policy of Geometric Design of Highways and Streets, 6th Edition, 2011" (AASHTO Green Book).

Table 1: Design Criteria for Proposed McKinley Avenue Overpass/Underpass of Grand Trunk Western Railroad

Design Element	Value
Functional Classification	Urban Arterial
Design Speed	40 mph
Lane width	12 feet
Curb offset	1.5 feet
Horizontal Curve minimum radius (Normal Crown)	762 feet
Horizontal Stopping Sight Distance	305 feet
Vertical Stopping Sight Distance	305 feet
Minimum vertical clearance – McKinley Ave under the Railroad	17'-4 1/2"
Minimum vertical clearance – McKinley Ave over the Railroad	23'-0"

The proposed roadway for McKinley Avenue has been evaluated using four different feasible alternates. The alternates consist of an overpass and underpass shifted to the north of the existing alignment and an overpass and underpass shifted to the south of the existing alignment. The horizontal alignments are somewhat unique for each of the four alternates. The general concept of shifting north or south of existing alignment and the horizontal curves are consistent for all four alternates, however the location of the horizontal curves was customized for each alternate to minimize the right-of-way and access impacts to adjacent property owners. Vertical alignments for the two overpass options, as well as the two underpass options, were nearly identical, relative to the location of the railroad crossing. This also meant that the required retaining wall limits would be similar for each set of overpass and underpass alternates. Further detail of each alternate is discussed under **Section 5.0** of this report.

4.2 Division Street and Catalpa Drive Extension

Additional improvements to Division Street and Catalpa Drive within the project area are being planned by the City. These improvements have been in consideration by the City for some time. Once the grade separation is constructed on McKinley Avenue, Filbert Road will not be an adequate north-south route for thru traffic and in some alternates the roadway will not remain open to thru traffic. Proposed improvements to Catalpa Drive and Division Street would help to relieve traffic flow from Filbert Road. Improvements to Catalpa Drive involve extending the existing roadway east to intersect with Filbert Road approximately 4,000 feet north of McKinley Avenue. A roundabout is proposed for the intersection of Filbert Road and Catalpa Drive. The roundabout would help facilitate the flow of traffic through the intersection, as well as divert southbound thru traffic from continuing further south along Filbert Road. Improvements to Division Street involve extending the existing roadway north to a tee intersection at Catalpa Drive. This intersection could be treated as a stop controlled intersection or a roundabout. The desired route for thru traffic on Filbert Road would be to use the

Division Street and Catalpa Drive extensions to minimize the proposed frontage roads along McKinley Avenue.

The proposed typical section for Division Street and Catalpa Drive will match the City of Mishawaka standards for the respective classification of the roads and is composed of one 12-foot lane in each direction with 2-foot curb and gutter. Five-foot sidewalk will be constructed five feet behind the back of the west curb line of Division Street. Similar

Figure 9 - Division and Catalpa Extension

sidewalk will be constructed on the south side of Catalpa Drive from the proposed intersection with Division Street and to the west to tie-in with the existing sidewalk. A graphical representation of the proposed Division Street and Catalpa Drive improvements can be found in **Appendix D, Figure D-2**.

4.3 Filbert Road

With McKinley Avenue proposed to go over or under the Grand Trunk Western Railroad, it is necessary to look at alternative alignments for Filbert Road. Over the course of the grade separation investigation, several alignment alternatives were evaluated, including:

- Raising or lowering the profile of Filbert Road to intersect with McKinley Avenue at the current intersection location as the McKinley Avenue profile raises or lowers,
- Realignments of Filbert Road through the area north and west of the existing businesses in the northwest quadrant of the existing McKinley/Filbert intersection, and

- Constructing a frontage road along McKinley Avenue to the west to where the grades would allow an intersection.

Some of the initial alternates for Filbert Road were discarded based on wetland, right of way, and property access impacts. The alignment alternatives for Filbert Road were evaluated and screened down to two alternates for each McKinley Avenue mainline alternate. Adequate R/W has been provided for future sidewalk as development occurs.

Filbert Road Alternate 1 is the same for all four McKinley Avenue alternates. This alternate consists of constructing a new roadway that tees into Filbert Road approximately 850 feet north of existing McKinley Avenue. The new road would then go west approximately 975 feet, where it will turn south to intersect McKinley Avenue. Went Avenue would be realigned approximately 55 feet to the west to meet the new roadway. A cul-de-sac would be constructed on Filbert Road south of where the new road intersects Filbert Road. Alternate 1 does satisfy the objectives of maintaining a connection between Filbert Road and McKinley Avenue and providing access for those properties that would otherwise have their access lost due to the grade separation. The new roadway, however, would run along the back side of their facilities, which would be require that they adjust the functionality of their site to accommodate this change in access. This was considered when determining the right of way impacts for each property.

Filbert Road Alternate 2 is generally described as a frontage road along the north side of the proposed McKinley Avenue realignment. The frontage road would go west from existing Filbert Road to where it could connect with McKinley Avenue. The frontage road alignment is slightly different for each of the four McKinley Avenue realignment alternates, but the general concept of the frontage road is similar for each alternate. Access for properties along the frontage road would be able to maintain their current site functionality.

The proposed typical section for Filbert Road and is composed of one 12-foot lane in each direction with 2-foot curb and gutter. Sidewalk along one or both sides of Filbert Road will be determined at the time of design.

Filbert Road realignment alternates are shown in **Appendix D** with each mainline alternate.

4.4 Other Local Roads (S-Lines)

Merrifield Avenue, Went Avenue and Cedar Street are three local streets impacted in a similar manner for all the mainline alternatives. See **Figure 10** below, for proposed typical section. As access to McKinley Avenue will no longer be feasible, it is recommended that Merrifield Avenue will be closed via a cul-de-sac. The final location of the cul-de-sac will vary depending on which alignment is selected, but generally it will be constructed as close to the overpass or underpass as possible to limit the amount of right of way impact.

Went Avenue will be realigned as it approaches McKinley Avenue. The realignment location will depend on which Filbert Road realignment alternate is selected, as some of the alternates create a four legged intersection with McKinley, Filbert and Went. Cedar Street will be reconstructed on the existing alignment to meet the proposed horizontal

and vertical alignments developed for McKinley Avenue. Construction limits along Cedar Street will be up to approximately 300 feet in order to adjust the vertical alignment to meet McKinley Avenue.

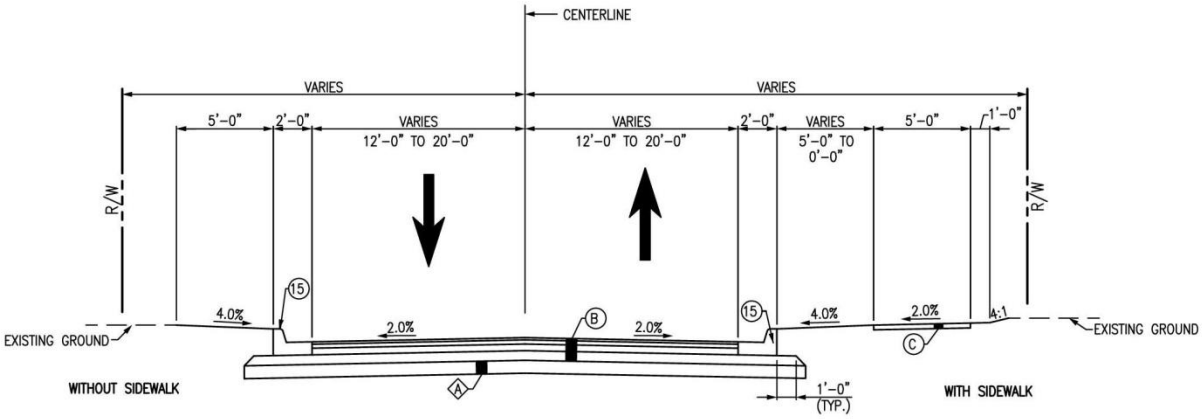


Figure 10 - Proposed Typical Section (S-Lines)

The proposed typical section for local access roads will generally match in with existing typical sections. Lane widths vary from 12 feet to 20 feet, with either a 1.5-foot curb offset and concrete curb or 2-foot combined curb and gutter to match existing conditions. Sidewalk will be placed in areas where sidewalk currently exists. Design criteria for various design speeds can be found in **Table 2**. In some instances, the horizontal curvature may be reduced, as directed by the City of Mishawaka, in order to reduce the amount of right-of-way impacted.

Table 2: Design Criteria for Filbert Road, Catalpa Drive, Division Street and Other Local Access Roads

Design Element	Value	Value	Value
Functional Classification	Urban Local	Urban Local	Urban Local
Design Speed	30 mph	35 mph	40 mph
Lane width	12 feet	12 feet	12 feet
Curb offset	1.5 feet	1.5 feet	1.5 feet
Horizontal Curve minimum radius (Normal Crown)	333 feet	510 feet	762 feet
Horizontal Curve Minimum Radius w/Superelevation	250 feet	371 feet	371 feet
Maximum Superelevation	4%	4%	4%
Horizontal Stopping Sight Distance	200 feet	250 feet	305 feet
Vertical Stopping Sight Distance	200 feet	250 feet	305 feet

5.0 General Description of Proposed Structure

The alignment alternatives for McKinley Avenue include a grade separation that would involve either an overpass or an underpass. Following are descriptions of the bridge structure and associated retaining walls for each grade separation bridge:

5.1 Underpass Alternate

For the underpass option, the proposed McKinley Avenue would cross under the Grand Trunk Western Railroad at a 26 degrees skew. This is approximately the same skew as the existing at-grade crossing. The bridge type considered is a two-span, steel plate deck girder bridge supported on full face abutments and a solid wall pier. The spans will be simply supported. The full face abutments and solid wall pier would bear on steel H-piles. The bridge will have two equal spans of fifty three feet and nine inches (53'-9") (measured from center line of bearing to centerline of bearing) to accommodate the proposed McKinley Avenue section under the railroad tracks. The typical section of McKinley Avenue under the tracks will consist of four 12-foot lanes, 16-foot raised median, 1.5-foot curb offset with 6-inch curb, 3-foot clear space behind the curb, and 5-foot raised sidewalks. A pedestrian handrail will be provided between the roadway and the raised sidewalks with a 3-foot offset from edge of sidewalk to face of pedestrian handrail. A 2-foot offset will be provided between the face of the abutment wall to the edge of sidewalk. This typical section would be similar to the typical section used for the Main Street Underpass in Mishawaka, Indiana. The structure will have a total out-out deck width of thirty four and four inches (34'-4") to accommodate the two existing Grand Trunk Western Railroad tracks and proposed access walkways on each side of the track.

The steel plate deck girders are anticipated to be 51 inches (51") deep which will support a 9-inch reinforced concrete deck on which the track bed will be placed. At the time of this study, the two span steel plate deck girders with a ballasted deck were found to be a more cost effective solution than a single span deck girder. A steel plate deck girder is the type of bridge preferred by Canadian National Railway in their Guidelines for Design of Railway Structures. Please note that Grand Trunk Western Railroad is a subsidiary of Canadian National Railway.

The bridge provides the minimum seventeen feet and four and a half inches (17'-4 ½") vertical clearance as required by the Grand Trunk Western Railroad and exceeds the sixteen feet and six inch (16'-6") vertical clearance required by AASHTO.

The approach work/excavation required to transition from the proposed profile of the underpass up to the existing grade of McKinley Avenue will require the construction of modular block walls with ground reinforcement. The modular block walls will have a precast concrete cap with a pedestrian handrail on top. Modular block walls are proposed in lieu of cast-in-place reinforced concrete walls, as they are less expensive and simpler to construct. Approximately 600 feet of modular block walls, west of the bridge, and 620 feet of modular block walls, east of the bridge, will be required to support the existing ground above the proposed grade of McKinley Avenue. The railroad will not allow the use of modular block walls within the railroad loading influence line. Therefore, cast-in-place reinforced concrete retaining walls will be provided

adjacent to the bridge abutments. In addition, cast-in-place reinforced concrete retaining walls will be constructed to retain the raised sidewalks adjacent to the roadway.

A temporary railroad runaround or (shoo-fly) will be required to maintain railroad traffic during construction of the underpass. Temporary shoring will be required to support the temporary railroad runaround. It is anticipated that approximately 300 feet of temporary shoring will be required. The temporary shoring is anticipated to consist of an anchored sheet pile wall driven between the temporary runaround and the excavation required for the bridge construction. This is similar to the method used to construct the Main Street Underpass.

5.2 Overpass Alternate

For the overpass option, McKinley Avenue would cross Grand Trunk Western Railroad at a 26 degree skew. In addition to spanning the Grand Trunk Western Railroad, the bridge will accommodate a possible future extension of Filbert Road. This corridor for the possible extension of Filbert Road under the bridge would be located west of the Grand Trunk Western Railroad tracks and parallel the alignment of the railroad. The bridge type considered is a two span, composite continuous prestressed concrete Hybrid Bulb-Tee Beam Bridge supported on integral end bents and an interior frame bent. The integral end bents would bear on 14-inch diameter steel encased piles immediately behind mechanically stabilized earth (MSE) walls. The MSE wall at the east end bent will be set a minimum of 28 feet from the centerline of the exterior track. The MSE wall at the west end bent will be set beyond the required clear zone of 22 feet measured from the proposed centerline of Filbert Road. Consideration was initially given to using 2H:1V spill slopes, however their use would have increased the overall bridge length (approximately 100 feet additional) and consequently the bridge cost. MSE walls are proposed for retaining the fill in lieu of cast-in-place reinforced concrete walls, as they are much less expensive and simpler to construct. The interior frame bent would also bear on 14-inch diameter steel encased piles. The interior frame bent will be provided with a reinforced concrete crash wall with a height of 7 feet above the top of the rail as required by AREMA and the Grand Trunk Western Railroad.

The bridge will have a total structure length of one hundred and seventy six feet and one inch (176’-1”).The bridge will have one span of ninety eight feet (98’-0”) (measured from centerline of end bent to centerline of interior bent) spanning over the railroad, accommodating the two existing tracks and a future third track along the Grand Trunk Western Railroad corridor. The other span will be seventy five feet (75’-0”) (measured from centerline of end bent to centerline of interior bent) spanning over the future extension of Filbert Road. The proposed typical section of Filbert Road under the bridge will consist of two 12-foot lanes, 1.5-foot curb offset with 6-inch curb, 5-foot buffer behind the curb, and 5-foot sidewalks. A 6-foot offset will be provided between the edge of the sidewalk to the existing right-of-way of the Grand Trunk Western Railroad in order to stay clear of the railroad right-of-way.

The structure will have a total out-out deck width of seventy six feet and four inches (76’-4”) to accommodate four 12-foot lanes, 4-foot shoulders and 8-foot sidewalks. Texas T type railings will be provided at the front of the sidewalk to separate pedestrian traffic from vehicular traffic and along the bridge fascias.

Prestressed Concrete Hybrid Bulb-Tee beams type 42”x 49” will support the 8-inch reinforced concrete deck. At the time of this study, this type of prestressed concrete girders was found to be the most cost effective solution for the bridge versus 2-span prestressed concrete AASHTO I-beams or single span steel plate girders.

The bridge provides the minimum 23-foot vertical and 28-foot horizontal clearances as required by AREMA and the Grand Trunk Western Railroad. The bridge will also exceed the minimum 16.5-foot vertical clearance and 10-foot horizontal clear zone (measured from edge of travel lane) for Filbert Road as required by AASHTO.

The approaches to the proposed bridge will be constructed on a retained fill versus an earthen embankment with 3H:1V fill slopes. MSE walls will be used to retain the fill along the north and south sides of the road. Approximately 720 feet of MSE walls west of the bridge and 760 feet of MSE walls east of the bridge will be required to support the proposed roadway above the existing grade of McKinley Avenue. Moment slabs atop the MSE walls will be required to support the sidewalks and railings.

6.0 Grade Separation Alignment Alternates

6.1 Underpass – North Shift

The underpass option shifted to the north in order to minimize right of way impacts and provide access for businesses along the south side of McKinley Avenue. Beginning just east of Went Avenue, the proposed horizontal alignment curves to the northeast and then back to the east to cross the railroad tracks, parallel with the existing McKinley Avenue centerline. The parallel alignment is approximately 90 feet north of the existing centerline and continues for approximately 200 feet, as it crosses under the railroad.

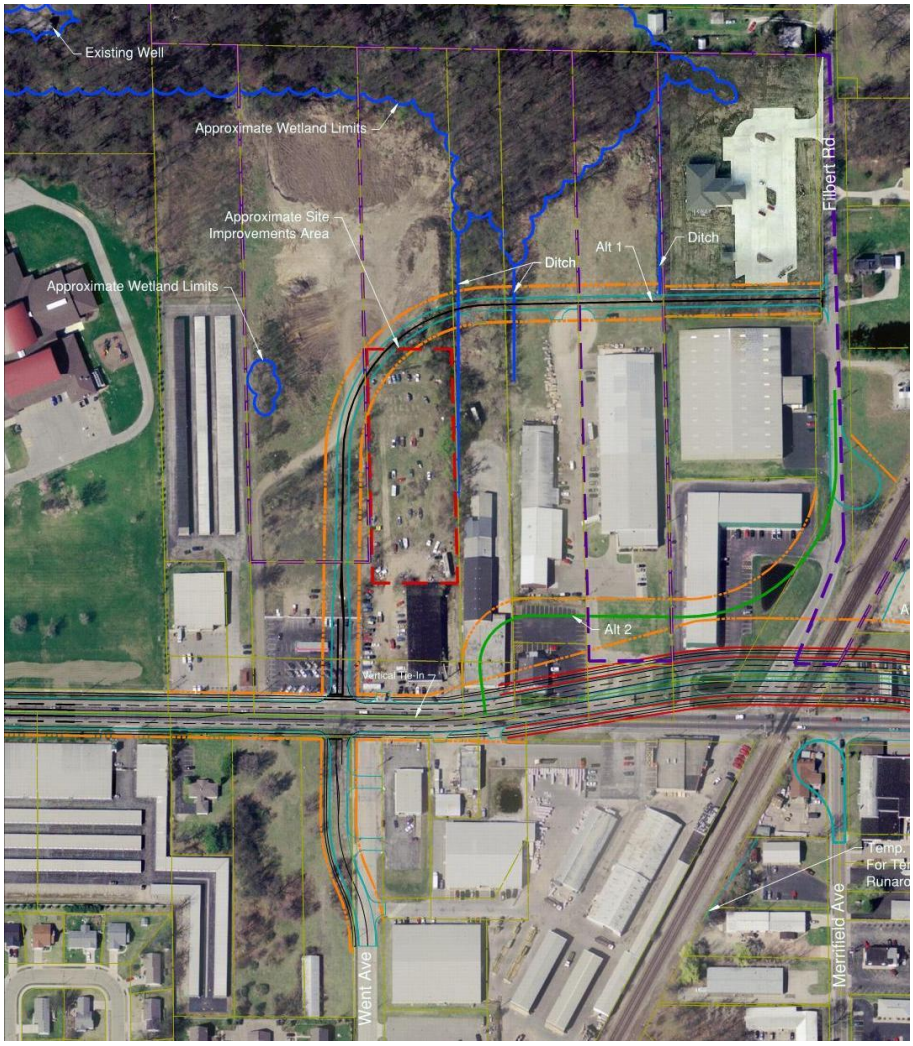


Figure 11 - Underpass - North Shift (West of Railroad)

East of the railroad crossing, the alignment would curve back to the southeast and then east again, to tie in with the existing centerline approximately 80 feet east of Cedar Street. See **Appendix D, Figure D-3** for this layout. The alignment allows for horizontal curves greater than 675 feet which is the AASHTO Green Book minimum for a low speed urban design (40 mph design speed). The curves as shown are 900 feet. No superelevation is required.

Vertically, the profile will divert from existing ground near the same location as the beginning of the horizontal curves. The grades were set at approximately 4.9%, in order to stay below the American with Disabilities Act (ADA) longitudinal slope good practice of 5% for sidewalk. While running alongside a street, the sidewalk is allowed to exceed the 5% requirement, it is still generally good practice to attempt to stay at or below the 5% mark. Vertical curves were set at or above the minimum K-value required to provide stopping sight distance at crest and sag curves.

As described previously, Filbert Road will require relocation. Filbert Road Alternate 2, in association with the Underpass-North Shift mainline alternate, consists of constructing a frontage road along the north side of realigned McKinley Avenue. The frontage road alignment would be constructed on parcels that would already involve substantial right of way impacts, so as to not require additional takes. The alignment would intersect McKinley Avenue, just west of the end of the retaining wall, approximately 600 feet west of the railroad crossing. A horizontal radius of 100 feet would be used where the frontage road curves into the intersection with McKinley Avenue. This is a substandard radius for 30 mph, however it is used where vehicles are traveling at low speeds as they approach the intersection with McKinley Avenue and where sight distance would be unimpeded.

6.2 Underpass – South Shift

Beginning just east of Went Avenue, the proposed horizontal alignment curves to the southeast and then back to the east, to cross the railroad tracks parallel to the existing McKinley Avenue centerline. The parallel alignment is approximately 90 feet south of the existing centerline and continues for approximately 200 feet as it crosses under the railroad. East of the railroad crossing, the alignment would curve back to the northeast and then east again to tie in with the existing centerline approximately 150 feet east of Cedar Street. This alignment is shown in **Appendix D, Figure D-4**.

Vertically, the profile matches is similar to the underpass north profile, with the slopes entering and exiting the underpass set at approximately 4.9%. Vertical curves were set no less than the minimum K-value required to provide stopping sight distance at crest and sag curves. Vertical tie-ins are at approximately 70 feet west of the Cedar Street centerline for the east tie-in and approximately 40 feet east of the existing Went Avenue centerline.

Filbert Road Alternate 2, in association with the Underpass-South Shift mainline alternate, consists of a frontage road along the north side of realigned McKinley Avenue. The alignment would be constructed to minimize impacts to existing buildings, yet provide access to the properties in the northwest quadrant of McKinley Avenue and Filbert Road. A 300 foot radius is required for 30 mph without superelevation, however this will result in the proposed road going through three (3) additional buildings located

on the north side of McKinley Avenue. Balancing the concerns of property impacts versus providing frontage access, produces the use of a substandard 125-foot radius as the frontage road approaches the intersection with McKinley Avenue. Additionally, the right of way required for the frontage road comes to approximately 18 feet from the building in the immediate northwest quadrant of the intersection of Filbert Road and McKinley Avenue.

Figure 12 - Building Located in Northwest Corner of McKinley and Filbert

With the alignment shifting south, a new roadway will be constructed in the northeast quadrant of the railroad and McKinley Avenue. The new roadway will line up with Cedar Street to create a four-way intersection with McKinley Avenue and will curve to the west where it will terminate with a d cul-de-sac. This new roadway will provide access to properties behind the north retaining wall of the underpass.

6.3 Overpass – North Shift

The overpass alignment shifted north of existing McKinley Avenue is similar to the underpass alignment in that it will run parallel to the existing centerline, however, due to the narrower typical section, the alignment offset from existing centerline runs parallel to and offset a distance of approximately 60 feet north of the existing centerline. Beginning at the existing McKinley Avenue/Went Avenue intersection, the proposed horizontal alignment curves to the northeast and then back to the east, crossing the railroad tracks parallel to the existing McKinley Avenue centerline. The alignment continues for approximately 960 feet as it crosses over the railroad. East of the railroad crossing, the alignment would curve back to the southeast and then east again to tie in with the existing McKinley Avenue centerline approximately at the intersection with Maplehurst Avenue. This alignment is shown in **Appendix D, Figure D-5**.

The vertical clearance requirements for the roadway over the railroad requires 23 feet of clearance compared to 17 feet-4 1/2 inches for an underpass alternate. This results in a longer distance of approximately 300 feet between the east and west “touchdown” points. The longitudinal slope was kept at approximately 4.9% to maintain ADA good practice. Vertical curves were set based on the minimum K-value required to provide stopping sight distance at crest and sag curves. Vertical tie-ins are at approximately 115 feet east of the Cedar Street centerline for the east tie-in and approximately 65 feet west of the existing Went Avenue centerline.

Filbert Road Alternate 2, in association with the Overpass-North Shift mainline alternate consists of a frontage road similar in shape to that of the Underpass – South Shift.

Rather than teeing into McKinley Avenue just west of the end of the proposed retaining wall, this frontage road alignment continues west to line up with realigned Went Avenue. The horizontal curve approaching the intersection with McKinley Avenue is currently laid out as a 125-foot radius, substandard for a 30 mph design speed which requires a 300 foot radius without superelevation. To avoid a substandard curve, two (2) additional buildings located on the north side of McKinley Avenue will be impacted.

6.4 Overpass – South Shift

Beginning approximately 450 feet west of Went Avenue, the proposed horizontal alignment curves to the southeast and then back to the east to run parallel to the existing McKinley Avenue centerline. The alignment continues for approximately 1,150 feet as it crosses over the railroad. East of the railroad crossing, the alignment would curve back to the northeast and then east again to tie in with the existing McKinley Avenue centerline approximately 55 feet west of Cedar Street. See **Appendix D, Figure D-6** for a graphical representation of this alignment.

Similar to the Overpass – North Shift alternate, the longitudinal slopes continue down at approximately 4.9%. The tie-in points at the west and east ends are approximately 100 feet west of Went Avenue and 70 feet east of Cedar Street, respectively.

Figure 13 - Overpass - South Shift (East of Railroad)

Filbert Road Alternate 2, in association with the Overpass-North Shift mainline alternate consists of a frontage road that runs parallel to the realigned McKinley Avenue. The frontage road will be able to use a portion of the existing right of way along McKinley Avenue to minimize the right of way impacts to the properties in the northwest quadrant of Filbert Road and McKinley Avenue. Approximately 750 feet west of the existing railroad crossing with McKinley Avenue, the frontage road will curve to the northwest and then back to the west to tee into a new road stubbed out north of

realigned McKinley Avenue. Went Avenue will also be realigned to line up with this new stubbed road. See **Appendix D, Figure D-6** for this layout. This frontage road is able to provide access to all the properties along the north side of McKinley Avenue west of the railroad crossing. Additionally, using the tee intersection avoids needing a substandard curve and minimizes the right of way impacts.

Similar to the Underpass – South Shift alternate, a new roadway will be constructed in the northeast quadrant of the railroad and McKinley Avenue in order to provide access to properties in the northeast quadrant. The new roadway will line up with Cedar Street to create a four-way intersection with McKinley Avenue and will curve to the west where it will terminate in a cul-de-sac. This alignment can be seen in **Appendix D, Figure D-6**.

7.0 Drainage

The drainage plan for the proposed improvements along McKinley Avenue involves constructing a closed storm sewer system that will ultimately outlet to the St. Joseph River. The system would include collecting storm water runoff from the selected Filbert Road alternate, as well as any properties that are negatively impacted by these proposed improvements. Whenever possible, the other local streets impacted by the grade separation project will utilize the existing storm sewer network they are currently using. At the direction of the City, only gravity flow storm sewer networks were considered.

Existing storm sewer facilities are present along Division Street and Catalpa Drive. The extension of these streets will utilize the existing storm sewer facilities. During the course of the design, the existing facilities will be analyzed to verify the capacity for the proposed improvements.

The storm sewer for the overpass alternates can connect to the Merrifield Avenue trunkline that travels south along Merrifield Avenue to outlet into a ditch south of Stanley Avenue. The existing 60-inch invert at McKinley Avenue is approximately 21 feet deep and would provide the ability to connect the new storm sewer network in without issue. No substantial additional cost would be incurred to use this outlet. It is recommended that the existing watershed area flowing to this outlet pipe be evaluated to verify that the existing 60-inch pipe is sized sufficiently to handle the extra storm water runoff generated from the proposed improvements.

Constructing a gravity storm sewer network for the underpass alternates is challenging due to restricted outfall possibilities. With the design of the underpass, the storm sewer network through the low point of the roadway would be at least 28 feet below existing grade. This eliminates the Merrifield Avenue trunkline as a viable outlet route. The only other existing trunkline to the St. Joseph River in the near vicinity of the project is along Sarah Street, approximately 3,300 feet west of the railroad. The Sarah Street trunkline is a 120-inch pipe with an invert approximately 30 feet deep. A gravity storm sewer trunkline could be constructed along McKinley Avenue to Sarah Street, however, the trunkline would outlet into the Sarah Street 120-inch pipe at the bottom. This is not a preferred alternative and could allow the Sarah Street trunkline to back up into the underpass in large flow events.

The only viable gravity storm sewer outlet for the underpass alternates is to construct a new trunkline from McKinley Avenue to the St. Joseph River. The trunkline would likely need to be a 48-inch pipe to handle the runoff generated from the proposed improvements, however upsizing may be considered to accommodate future improvements. The trunkline would be approximately 30 feet deep and would require approximately 4,000 feet of tunneling or microtunneling along Merrifield Avenue to get to the river. This operation will incur substantial additional cost to the grade separation project.

8.0 Sanitary Sewer & Water Utilities

8.1 Underpass – North Shift

Water Relocation

If an underpass on the north side of McKinley Avenue is selected then the majority of the existing 12-inch water main, within the project limits, will need to be relocated. There are existing water services on both the north and south sides of McKinley that will need to be maintained. The major proposed water main relocation would include a new 12-inch water main running south of the proposed McKinley Avenue underpass from just east of Went Street to just west of Cedar Street. The relocation of this 12-inch water main would include the installation of a casing for crossing the Grand Trunk Railroad right-of-way as well as a connection to the existing 12-inch water main along Merrifield Avenue. Refer to the Water and Sanitary Relocation in **Appendix E, Figure E-1** for the proposed water main relocation plan. To maintain services on the north side of the underpass as well as connecting to the Filbert Road water main, a new 12-inch water main would be also be installed north of the underpass from east of Went Street to Filbert Road, just west of the railroad. An 8-inch water main extension would also be required along the north side of the underpass east of the railroad to provide water to existing services in that area.

Sanitary Sewer Relocation

A proposed underpass on the north side of McKinley Avenue will require the relocation of the existing 12-inch sanitary sewer along McKinley Avenue as well as the installation of a sanitary lift station and force main. The proposed relocation would include a new 12-inch sanitary sewer along the north side of the underpass from just east of Went Street to a proposed lift station located just west of Cedar Street. This new gravity sewer would also collect the flow from the existing 12-inch sanitary sewer running south along Filbert Road. The installation of this sanitary sewer would require the installation of a casing for crossing the Grand Trunk Railroad right-of-way. A lift station, located near Cedar Street, would need to be installed to collect the gravity sanitary sewer and pump it via a force main. The force main would run south across McKinley Avenue and then west back to the existing 12-inch sanitary sewer on Merrifield Avenue. The existing sanitary sewer south of McKinley Avenue and west of the railroad may also need to be maintained. The installation of a new 8-inch sanitary sewer is proposed to run east, crossing the railroad, and connecting to the existing 12-inch sanitary sewer along Merrifield Avenue. The proposed relocation plan for the sanitary sewer is shown in the Water and Sanitary Sewer Relocation in **Appendix E, Figure E-1**.

8.2 Underpass – South Shift

Water Relocation

If McKinley Avenue realignment includes a south underpass, sections of the existing 12-inch water main along McKinley Avenue would need to be replaced at a lower elevation or relocated to accommodate the grade changes for the underpass. A new 12-inch water main would also be required to run south of the underpass from just west of Cedar Street to the existing 12-inch water main along Merrifield Avenue. Refer to the Water and Sanitary Relocation in **Appendix E, Figure E-2** for the proposed water relocation plan.

Sanitary Sewer Relocation

The alternative of a south underpass for McKinley Avenue would require the relocation of portions of the existing 12-inch sanitary sewer along McKinley Avenue as well as the installation of a sanitary lift station and force main. A section of 12-inch sanitary sewer from the manhole just east of Went Street to the next downstream manhole would need to be relocated further north to avoid the proposed underpass grade changes. The existing 12-inch sanitary sewer that runs south across McKinley Avenue along Merrifield Avenue would have to be eliminated to accommodate the underpass. This 12-inch sanitary sewer would have to be rerouted along the north side of the underpass to a proposed lift station just west of Cedar Street. The lift station would then pump, via a force main, the sanitary sewage south of McKinley Avenue and then west along the south side of the underpass to the existing 12-inch sanitary sewer along Merrifield Avenue. The proposed relocation plan for the sanitary sewer is shown in the Water and Sanitary Sewer Relocation in **Appendix E, Figure E-2**.

8.3 Overpass – North Shift

Water Relocation

The north overpass alternative will require the relocation of the existing 12-inch water main that is located within the project limits along McKinley Avenue. The existing water services on both the north and south sides of McKinley Avenue would require water supply. The relocated 12-inch water main would run south of the proposed overpass, from just east of Went Street, crossing the Grand Western Railroad, tying into the existing 12-inch water along Merrifield and then reconnecting back to the existing 12-inch water along McKinley Avenue just west of Cedar Street. This proposed alignment would require the installation of a casing for crossing the railroad right-of-way. To provide water supply to an existing 12-inch water main along Filbert Road, as well as provide for water services on the north side of McKinley Avenue west of the railroad, a 12-inch water main extension is also required. The proposed 12-inch water main extension would run north of the overpass from east of Went Street to the existing 12-inch water main along Filbert Road. An 8-inch water main extension is also proposed to run along the north side of the proposed overpass east of the railroad to provide supply for existing water services located in that area. Refer to the Water and Sanitary Relocation in **Appendix E, Figure E-3** for the proposed water relocation plan.

Sanitary Sewer Relocation

The existing 12-inch sanitary sewer along McKinley Avenue will need to be relocated to the south side of the proposed roadway if the north overpass alternative is selected. The relocated 12-inch sanitary sewer would run from just east of Went Street to a proposed manhole just west of the railroad. This manhole will also receive a new sanitary sewer extension from the north that will bring flow from the existing 12-inch sanitary sewer running south along Filbert Road. The relocated 12-inch sewer will then continue east, crossing the Grand Trunks Railroad right-of-way within a casing and then connecting to the existing 12-inch sanitary sewer at Merrifeld Avenue. The proposed relocation plan for the sanitary sewer is shown in the Water and Sanitary Sewer Relocation in **Appendix E, Figure E-3**. The existing 12-inch sanitary sewer running south along Filbert Road would need to be maintained during construction of the overpass bridge with a portion of a new sewer being installed to complete the connection to the proposed 12-inch sanitary sewer being rerouted south of the overpass.

8.4 Overpass – South Shift

Water Relocation

The south overpass does not have any significant impact on the existing 12-inch water main along McKinley Avenue. If the south overpass option is selected further evaluation of the existing water would be done to determine if any sections of the water main would have to be reinstalled at a lower elevation to meet the proposed grades determined in design.

Sanitary Sewer Relocation

If a south overpass is selected for McKinley Avenue the existing 12-inch sanitary sewer along McKinley Avenue and Merrifield Avenue will remain in place. The portion of existing sanitary sewer that crosses south of McKinley Avenue at Filbert Road, to provide service to a building south of McKinley and west of the railroad, would have to be abandoned. If sanitary sewer service for this area south of McKinley has to be maintained a new 8-inch sanitary sewer would need to be installed. The proposed 8-inch sanitary sewer would run east, crossing the railroad in a casing, and connecting to the existing 12-inch sanitary sewer along Merrifield Avenue. The proposed relocation plan for this sanitary sewer is shown in the Water and Sanitary Sewer Relocation in **Appendix E, Figure E-4**.

8.5 Division Street and Catalpa Drive Extension

Water Utilities

There are currently existing water facilities running along Catalpa Drive and Filbert Road which can be seen in **Appendix E, Figures E-5 and E-6**. No additional water infrastructure would be needed other than future water service connections along these roadways.

Sanitary Sewer Utilities

The City of Mishawaka is currently working on installing new gravity sanitary sewer infrastructure along Main Street and Catalpa Drive. The City is proposing to install an 8" gravity sanitary main from the intersection of Main Street and Catalpa Drive, heading east along Catalpa Drive approximately 293 feet and ending with a sanitary manhole. If improvements to Division Street and Catalpa Drive are implemented, it is recommended that the 293 foot sewer stub along Catalpa be upsized to a 12" sanitary main as can be seen in **Appendix E, Figures E-5 and E-6**. After the 12" sewer stub is installed, a future connection can be made and a proposed 12" gravity sanitary main would continue to be run east along the north side of Catalpa Drive toward Filbert Road. At the intersection of Filbert Road and Catalpa Drive, a 12" sanitary main would be stubbed to the north and south along Filbert Road to the end of the project limits which can also be seen on **Figures E-5 and E-6**.

9.0 Utility Relocation

Utility companies that have facilities in the project limits were contacted as a part of this study. These included AEP, AT&T, NIPSCO, Comcast, US Signal and Zayo Bandwidth/PLB Engineering. At the time of this report, Comcast was the only utility company to correspond back to us. Also, we received information regarding the sanitary and storm sewer information from the City. It is anticipated, that as this project continues into the preferred alternative stage and development of construction plans, all the utility companies that have facilities in the project limits will be involved in developing relocation plans.

Master Plan utility layouts for the north and south overpass alternates as well as the Division Street and Catalpa Drive extension are included in **Appendix E, Figures E-7, E-8, & E-9**. The master plan shows existing utilities, proposed roadway improvements, and proposed sanitary sewer and water utility relocation.

10.0 Railroad Coordination

Initial contact was made with the Grand trunk Western Railroad regarding the project. Mr. Marc Dupuis has been identified as the contact person for this project. Preliminary information regarding the typical section developed for the project has been forwarded to him. At this time, the railroad has not provided any further response.

11.0 Geotechnical Investigation

A geotechnical investigation was performed as part of the project. Two (2) test borings were drilled to approximately eighty feet (80') below existing ground surface to obtain preliminary soil and groundwater information. Groundwater was encountered at a depth of approximately eight feet six inches (8'-6"). A detailed report can be found in **Appendix H**.

12.0 Maintenance of Traffic

Maintenance of traffic during construction of the overpass alternates will primarily consist of maintaining one lane in each direction on the existing roadway, however, it is anticipated that there will also be some construction activity that will require traffic to be

diverted to a detour route. The roadway has existing paved shoulders varying from 8 to 12 feet in width, that will allow traffic to be moved to the north or south side and provide working room for construction. This also will allow the majority of the overpass alignment that runs parallel to the existing centerline to be constructed while traffic remains on existing McKinley Avenue. Traffic will need to be detoured for a short period to for the retaining walls and roadway to be constructed at the tie-in points at each end of the overpass. The contractor should be able to construct both ends at the same time to limit the amount of time the road is closed.

Maintenance of traffic for the underpass will also consist of maintaining one lane of traffic in each direction on the existing McKinley Avenue roadway. The paved shoulders will be utilized to provide as much working room as possible. As with the overpass, it is anticipated that McKinley Avenue will need to be closed for a short period of time to construct the tie-ins at the east and west ends. During this period, a temporary detour route will be in use.

Any temporary detour route will be restricted by the railroad tracks as well as the St. Joseph River to the south. The official detour route would use Cedar Street to go south to Mishawaka Avenue, then west to Main Street, then back north to McKinley Avenue. Local traffic will tend to find their own way through the local street network, however the railroad limits the available number of local routes.

The alignments and existing pavement limits are based on study level information. Once a detailed topographic survey has been completed for this project, the proposed alignment can be adjusted to provide sufficient room for maintaining traffic during construction. In the case of all four mainline alternates, consideration will be given to making adjustments to the alignment to balance right of way impacts, costs and maintaining traffic.

13.0 Temporary RR Runaround

It is anticipated that the Grand Trunk Western Railroad must stay in operation through the duration of the grade separation construction. The overpass option will allow for rail traffic to be maintained on the existing tracks. The underpass option, however, will require that a temporary railroad runaround be used during construction of the proposed railroad bridge. The existing railroad in this area consists of two tracks and it is anticipated that the temporary runaround will also be required to accommodate two sets of tracks. This will require approximately 1,900 feet of temporary railroad track be installed for the runaround. Based on right of way impacts, the runaround will be east of the existing railroad alignment if the north underpass alternate is selected. Alternately, if the south underpass is selected, the runaround would best be placed on the west side of the existing railroad alignment. **Appendix D, Figure D-7** shows preliminary limits of the temporary railroad runaround. The impacts to the existing heated switch will be coordinated with the Grand Trunk Western Railroad.

14.0 Right of Way

Property research and analysis were completed for the various parcels within the project limits. Property identification and characteristics were developed through visual observation and research of various resources including Michiana Regional Geographic

Information System (GIS), St. Joseph County public records and/or review of prior sales history, as available through public resources. GIS records and aerial mapping resources were obtained to assist in identification of approximate locations of existing property boundaries and improvements. Comprehensive topographical survey and right-of-way engineering research were beyond the scope of this study; therefore, property ownership and precise locations of property boundaries and improvements are preliminary in nature and for planning level analysis only. Future topographical survey and right-of-way engineering research may reveal inconsistencies in available GIS and aerial mapping resources, which may indicate proposed property impacts may be less than or more severe than preliminary planning level analysis within this study.

In completing this analysis, anticipated property impacts for vacant lots were evaluated by determining residual site sizes subsequent to acquisition of proposed right-of-way and assessing conformance of the residual sites with current development standards and/or excess land considerations. Vacant land parcels with minimal residual site impacts were considered to require partial acquisition only. Vacant land parcels with substantial impacts and/or residual excess land considerations were considered to require total parcel acquisition.

Parcels consisting of building improvements were considered to require total acquisition in instances that proposed right-of-way is anticipated to be in major conflict with existing improvements or in circumstances that proposed right-of-way results in landlocked parcels due to elimination of property access. Acquisition of proposed right-of-way that is preliminarily determined to not functionally alter the building improvements at the site, or result in substantial severance damages to the residual site, will be considered eligible for partial acquisition. It is noted that property negotiations may necessitate partial or total acquisition of properties inconsistent with the preliminary planning analysis completed as part of this study. Considerations of variance submittals and/or approvals are beyond the scope of this study and excluded from consideration in this study.

Preliminary parcel quantities and preliminary right-of-way costs for the various alternates are identified in **Table 3** below. These right-of-way costs do not include costs for right-of-way engineering services and acquisition.

Table 3: Preliminary Right of Way Analysis

Mainline Alternate	Filbert Alternate	Parcel Quantity	Acquisition Type		Preliminary R/W Costs*
			Partial	Total	
Underpass - North	1	39	27	12	$5,300,000
	2	34	22	12	$4,800,000
Underpass - South	1	48	31	17	$7,900,000
	2	44	27	17	$7,600,000
Overpass - North	1	37	25	12	$4,100,000
	2	35	19	16	$5,100,000
Overpass - South	1	43	27	16	$6,900,000
	2	37	25	12	$5,400,000
Catalpa & Division		11	10	1	$700,000

*Inclusive of a 25% contingency allowance.

15.0 Order-of-Magnitude Opinion of Probable Costs

Preliminary construction costs have been identified for each mainline alignment alternate as well as each Filbert Road alternate. The increase in construction costs associated with the underpass are due to the need to construct an entirely new trunkline storm sewer route to the St. Joseph River. The construction costs have been inflated to the year 2014. A summary of the estimated project costs is shown in **Table 4** below and a more detailed breakdown of the construction costs is provided in **Appendix G.**

Table 4: Preliminary Estimation of Probable Construction and Right of Way Costs

Mainline Alternate	Filbert Alternate	Construction Costs	R/W Costs	Total Costs
Underpass – North*	1	$40,850,000.00	$5,300,000.00	$46,150,000.00
	2	$40,420,000.00	$4,800,000.00	$45,220,000.00
Underpass – South*	1	$40,420,000.00	$7,900,000.00	$48,320,000.00
	2	$39,880,000.00	$7,600,000.00	$47,480,000.00
Overpass - North	1	$16,010,000.00	$4,100,000.00	$20,110,000.00
	2	$15,800,000.00	$5,100,000.00	$20,900,000.00
Overpass - South	1	$15,520,000.00	$6,900,000.00	$22,420,000.00
	2	$15,370,000.00	$5,400,000.00	$20,770,000.00
Catalpa and Division		$3,650,000.00	$700,000.00	$4,350,000.00

*** Includes $13,300,000.00 for a 60-inch outfall to St. Joseph River. This amount could be reduced to $10,000,000.00 for a 48-inch outfall.**

The estimated costs do not include design engineering services, utility reimbursement, permitting and construction observation services

16.0 Recommendation

The process of investigating an overpass or underpass grade separation at the McKinley Avenue crossing of the Grand Trunk Western railroad tracks uncovered information that pushed the overpass as the preferred option. Three main factors contributed to the overpass being a more favorable option: project costs, ground water elevation, and right of way impacts.

Generally, the construction and right of way costs were higher for the mainline construction of the underpass versus an overpass. Additionally, the existing storm sewer infrastructure in this area is not able to provide a feasible outlet route to the St. Joseph River for the underpass option and would require an entirely new storm sewer

trunkline be tunneled to the river. The construction costs for this new trunkline increase the total underpass project cost substantially higher than the overpass costs.

The high groundwater elevation is something that could possibly be managed using an underdrain system with the underpass. However, construction and maintenance complexities make this a less than desirable situation. Engineering judgment would dictate that other options be considered before proceeding with an underpass.

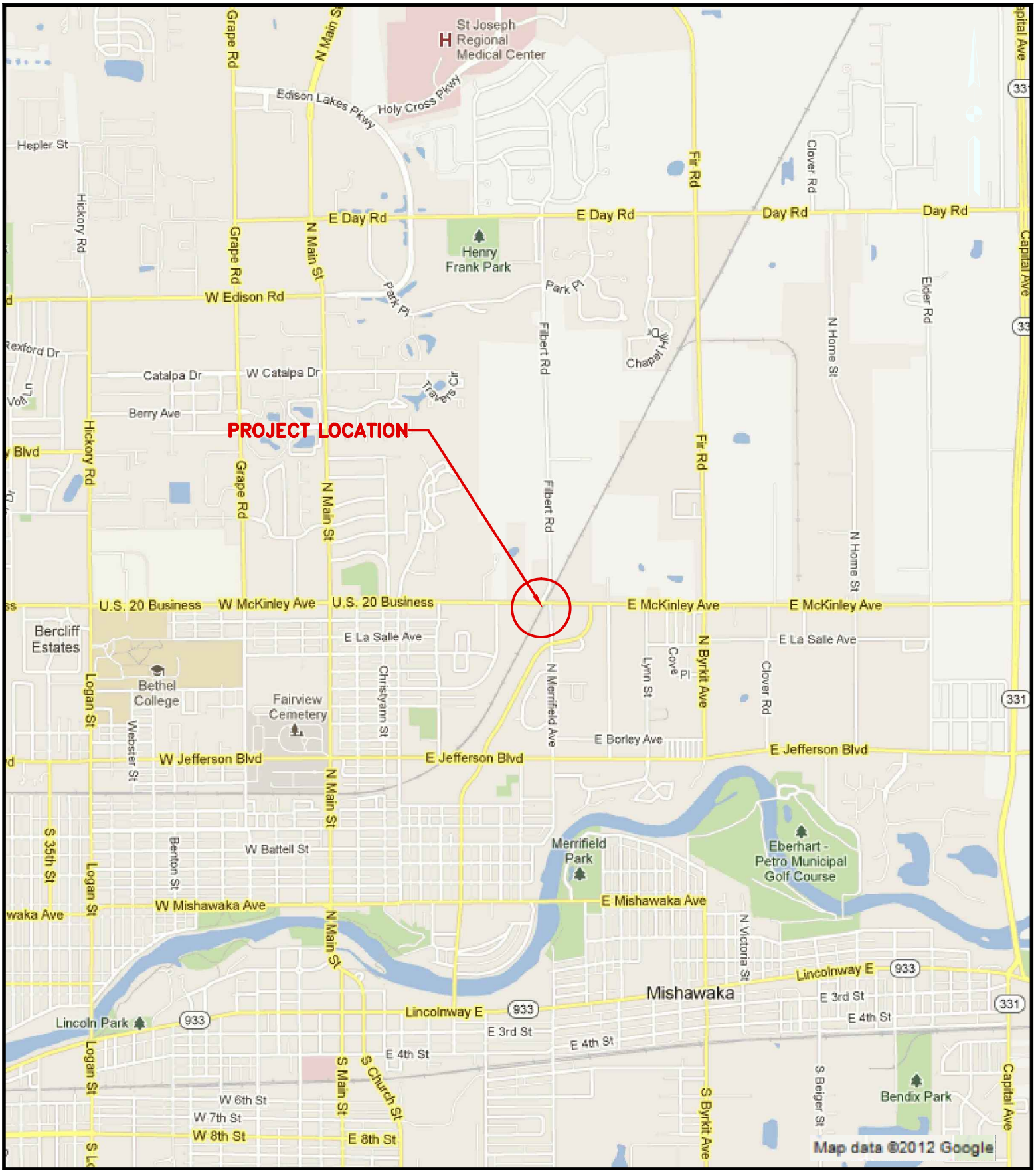
The nature of the typical overpass and underpass sections illustrate why the overpass option is more favorable in terms of right of way impacts. The retaining wall reinforcement and excavation limits for the underpass are much larger than those for the overpass option.

Based on these factors, it is recommended that the overpass grade separation is a more feasible alternative than an underpass. The mainline alternates presented in this report include shifting the alignment north or south in order to reduce the amount of right of way impacts to the opposite side of existing McKinley Avenue. At this time, a recommendation as to which alignment shift is more preferred will not be made. The City of Mishawaka and St. Joseph County have elected to present the findings of this report to the public by way of a public information meeting. It is recommended that the public feedback from this meeting, along with information presented in this report concerning construction costs, right of way impacts, and local access road options be considered when proceeding to the next step in development of this grade separation project. Similar considerations should also be placed on the alignment options for Filbert Road.

APPENDIX A

Existing Conditions

Project Location
Zoning Map
Land Use Map
Soil Survey
Existing Utilities



DLZ

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

PROJECT LOCATION MAP
A–1

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE:	MAY 2012
SCALE:	
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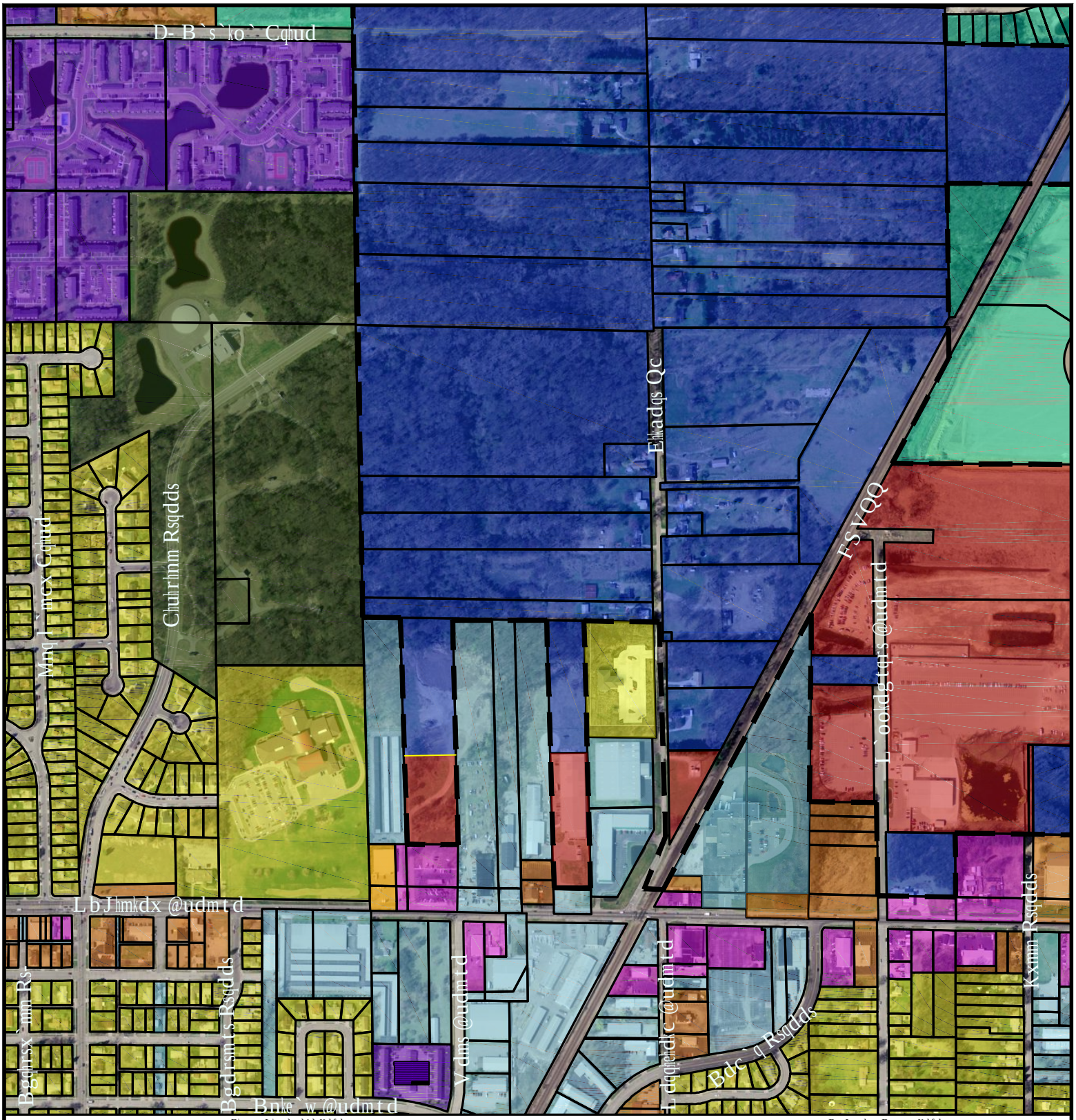
PROJECT NUMBER	1261–2027–90



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MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

ZONING MAP
A–2

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
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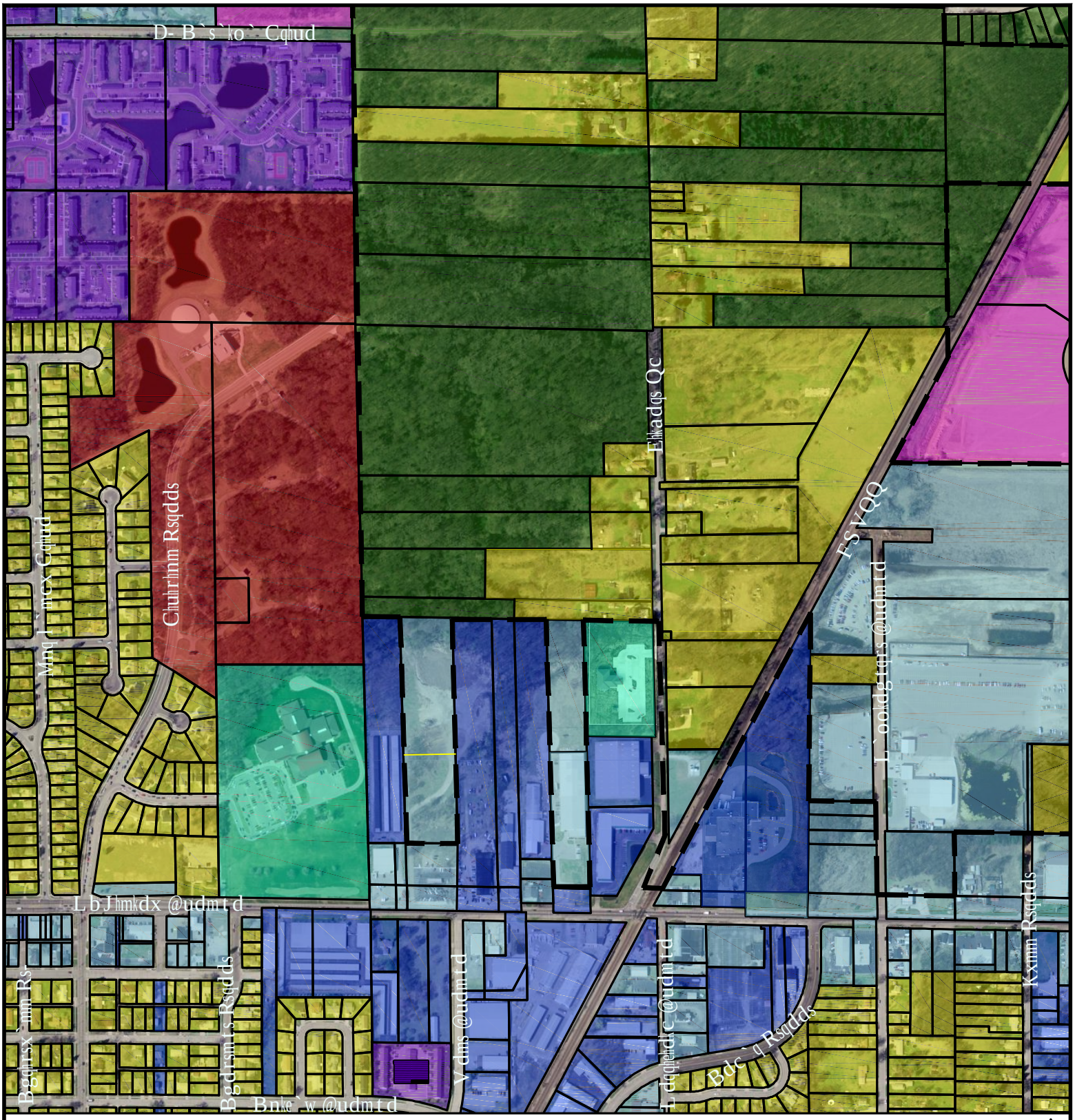
SCALE:	1" = 600'
CITY PROJECT NUMBER	ENT–12–009
PROJECT NUMBER	1261–2027–90



DLZ

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

LAND USE MAP
A–3

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE:	MAY 2012
SCALE:	1" = 600'
CITY PROJECT NUMBER	ENT–12–009
PROJECT NUMBER	1261–2027–90

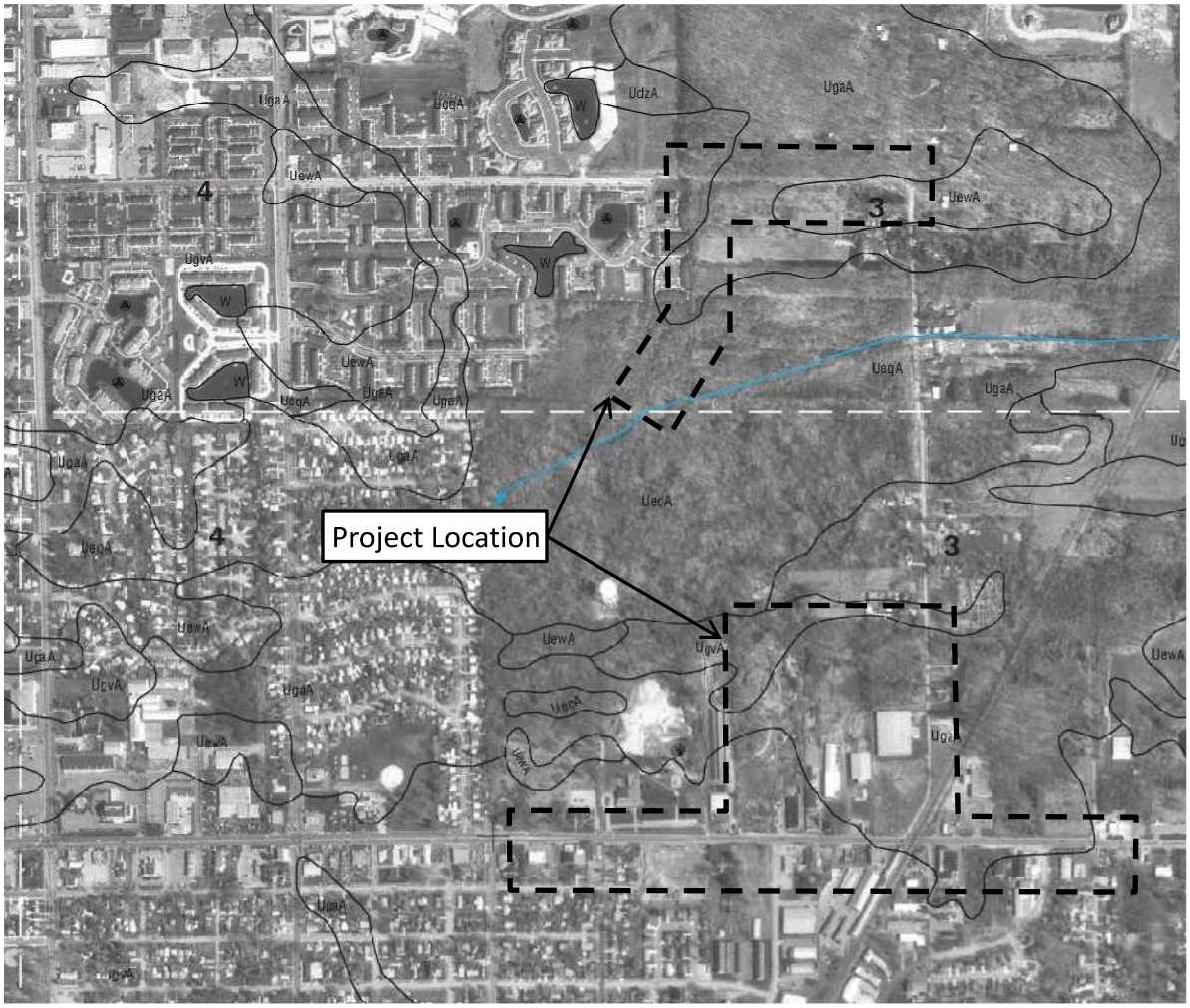


Figure A-4: Soil Survey Map

United States Department of Agriculture
Natural Resources Conservation Service

SOIL LEGEND

Map symbols consist of a combination of letters and numbers. The initial letters represent the kind of soil. An uppercase letter following the first three or four letters indicates the class of slope. A second uppercase letter indicates either frequency or duration of flooding or presence or absence of artificial drainage. The letter I indicates frequent flooding for long periods, the letter K indicates occasional flooding for brief periods, the letter N indicates that the map unit is drained, and the letter U indicates that the map unit is undrained. A final number of 2 following the slope class letter indicates that the soil is moderately eroded, and a final number of 3 indicates that the soil is severely eroded. Absence of a final number following the slope class letter indicates that the soil is not eroded or is only slightly eroded.

SYMBOL	NAME
AahAK	Abscota loamy sand, 0 to 2 percent slopes, occasionally flooded, brief duration
AatAN	Ackerman muck, drained, 0 to 1 percent slopes
AbhAN	Adrian muck, drained, 0 to 1 percent slopes
AbhAU	Adrian muck, undrained, 0 to 1 percent slopes
ApuAN	Antung muck, drained, 0 to 1 percent slopes
AxvA	Auten loam, 0 to 1 percent slopes
BaaA	Bainter sandy loam, 0 to 1 percent slopes
BaaB	Bainter sandy loam, 1 to 4 percent slopes
BaaC2	Bainter sandy loam, 4 to 10 percent slopes, eroded
BbmA	Baugo silt loam, 0 to 1 percent slopes
BmgA	Blount silt loam, 0 to 2 percent slopes
BshA	Brady sandy loam, 0 to 1 percent slopes
BsxA	Brems-Morocco loamy sands, 0 to 1 percent slopes
BteA	Brems loamy sand, 0 to 1 percent slopes
BuuA	Brookston loam, 0 to 1 percent slopes
CmbAl	Cohoctah loam, 0 to 1 percent slopes, frequently flooded, brief duration
CnbA	Coloma sand, 0 to 2 percent slopes
CnbB	Coloma sand, 2 to 5 percent slopes
CnbC	Coloma sand, 5 to 10 percent slopes
CnbD	Coloma sand, 10 to 18 percent slopes
CrrA	Coupee silt loam, 0 to 1 percent slopes
CvdA	Crosier loam, 0 to 1 percent slopes
CvdB	Crosier loam, 1 to 4 percent slopes
CwkA	Crumstown fine sandy loam, 0 to 1 percent slopes
CwkB	Crumstown fine sandy loam, 1 to 5 percent slopes
DcrA	Del Rey silty clay loam, 0 to 1 percent slopes
EchAN	Edwards muck, drained, 0 to 1 percent slopes
EchAU	Edwards muck, undrained, 0 to 1 percent slopes
EcrAN	Edselton muck, drained, 0 to 1 percent slopes
EcrAU	Edselton muck, undrained, 0 to 1 percent slopes
EmeA	Elston sandy loam, 0 to 1 percent slopes
GczA	Gilford sandy loam, 0 to 1 percent slopes
GdnA	Gilford mucky sandy loam, 0 to 1 percent slopes
HfbAN	Henrietta muck, drained, 0 to 1 percent slopes
HfbAU	Henrietta muck, undrained, 0 to 1 percent slopes
HkkA	Hillsdale sandy loam, 0 to 1 percent slopes
HkkB	Hillsdale sandy loam, 1 to 5 percent slopes
HknC2	Hillsdale-Oshtemo sandy loams, 5 to 10 percent slopes, eroded
HknD2	Hillsdale-Oshtemo sandy loams, 10 to 18 percent slopes, eroded
HkpC2	Hillsdale-Tracy sandy loams, 5 to 10 percent slopes, eroded
HkpD2	Hillsdale-Tracy sandy loams, 10 to 18 percent slopes, eroded
HtbAN	Houghton muck, drained, 0 to 1 percent slopes
HtbAU	Houghton muck, undrained, 0 to 1 percent slopes
JaaAK	Jamestown silt loam, 0 to 1 percent slopes, occasionally flooded, brief duration
MfaA	Martinsville loam, 0 to 1 percent slopes
MfaB2	Martinsville loam, 1 to 5 percent slopes, eroded
MfaC2	Martinsville loam, 5 to 10 percent slopes, eroded
MfrAN	Madaus muck, drained, 0 to 1 percent slopes
MfrAU	Madaus muck, undrained, 0 to 1 percent slopes
MgcA	Maumee loamy sand, 0 to 1 percent slopes
MgdAN	Martisco muck, drained, 0 to 1 percent slopes
MhaA	Maumee loamy fine sand, 0 to 1 percent slopes
MhbA	Maumee mucky loamy fine sand, 0 to 1 percent slopes
MmbC2	Miami loam, 5 to 10 percent slopes, eroded
MmdC3	Miami clay loam, 5 to 10 percent slopes, severely eroded
MmdD3	Miami clay loam, 10 to 18 percent slopes, severely eroded
MouA	Milford silty clay loam, 0 to 1 percent slopes
MsaA	Mishawaka sandy loam, 0 to 1 percent slopes
MtsB2	Morley silt loam, 2 to 6 percent slopes, eroded
MtsC2	Morley silt loam, 6 to 12 percent slopes, eroded
MubD3	Morley silty clay loam, 12 to 18 percent slopes, severely eroded
MvhAN	Moston muck, drained, 0 to 1 percent slopes
MvhAU	Moston muck, undrained, 0 to 1 percent slopes
MvkA	Morocco loamy sand, 0 to 1 percent slopes
MwzAN	Muskego muck, drained, 0 to 1 percent slopes
MwzAU	Muskego muck, undrained, 0 to 1 percent slopes
OkrA	Oshtemo fine sandy loam, 0 to 1 percent slopes
OkrB	Oshtemo fine sandy loam, 1 to 5 percent slopes
OkrC2	Oshtemo fine sandy loam, 5 to 10 percent slopes, eroded
OkrD	Oshtemo fine sandy loam, 10 to 18 percent slopes
OlcA	Oshtemo sandy loam, 0 to 1 percent slopes
OlcB	Oshtemo sandy loam, 1 to 5 percent slopes
OlcC2	Oshtemo sandy loam, 5 to 10 percent slopes, eroded
OlcD	Oshtemo sandy loam, 10 to 18 percent slopes
OmgA	Osolo loamy sand, 0 to 1 percent slopes
PaaAN	Palms muck, drained, 0 to 1 percent slopes
PaaAU	Palms muck, undrained, 0 to 1 percent slopes
Pmg	Pits, gravel
PxlA	Psammaquents
Pxo	Psamments
QuiA	Quinn loam, 0 to 1 percent slopes
QujA	Quinn sandy loam, 0 to 1 percent slopes
RenA	Rensselaer mucky loam, 0 to 1 percent slopes
ReyA	Rensselaer loam, 0 to 1 percent slopes

SYMBOL	NAME
RopA	Riddles-Oshtemo fine sandy loams, 0 to 1 percent slopes
RopB	Riddles-Oshtemo fine sandy loams, 1 to 5 percent slopes
RopC2	Riddles-Oshtemo fine sandy loams, 5 to 10 percent slopes, eroded
RopD2	Riddles-Oshtemo fine sandy loams, 10 to 18 percent slopes, eroded
RoqB	Riddles-Metea complex, 1 to 5 percent slopes
RoqC2	Riddles-Metea complex, 5 to 10 percent slopes, eroded
RoqD2	Riddles-Metea complex, 10 to 18 percent slopes, eroded
SdzA	Selfridge-Crosier complex, 0 to 1 percent slopes
SdzaB	Selfridge-Brems loamy sands, 1 to 4 percent slopes
SesA	Schoolcraft loam, 0 to 1 percent slopes
SnlA	Southwest silt loam, 0 to 1 percent slopes
TmpA	Tracy sandy loam, 0 to 1 percent slopes
TmpB	Tracy sandy loam, 1 to 5 percent slopes
TmpC2	Tracy sandy loam, 5 to 10 percent slopes, eroded
TmpD	Tracy sandy loam, 10 to 18 percent slopes
TnwA	Troxel silt loam, 0 to 1 percent slopes
TxuA	Tyner loamy sand, 0 to 1 percent slopes
TxuB	Tyner loamy sand, 1 to 5 percent slopes
TxuC	Tyner loamy sand, 5 to 10 percent slopes
TxuD	Tyner loamy sand, 10 to 18 percent slopes
TxuF	Tyner loamy sand, 18 to 45 percent slopes
Uam	Udorthents, loamy
UdeA	Urban land-Bainter complex, 0 to 1 percent slopes
UdeB	Urban land-Bainter complex, 1 to 4 percent slopes
UdeC	Urban land-Bainter complex, 4 to 10 percent slopes
UdkA	Urban land-Brady complex, 0 to 1 percent slopes
UdzA	Urban land-Auten complex, 0 to 1 percent slopes
UeaA	Urban land-Crosier complex, 0 to 3 percent slopes
UeqA	Urban land-Gilford complex, 0 to 1 percent slopes
UewA	Urban land-Brems-Morocco complex, 0 to 1 percent slopes
UfbA	Urban land-Brookston complex, 0 to 1 percent slopes
UfhA	Urban land-Coloma complex, 0 to 2 percent slopes
UfhB	Urban land-Coloma complex, 2 to 5 percent slopes
UfhC	Urban land-Coloma complex, 5 to 10 percent slopes
UfmA	Urban land-Coupee complex, 0 to 1 percent slopes
UfrA	Urban land-Del Rey complex, 0 to 1 percent slopes
UftA	Urban land-Elston complex, 0 to 1 percent slopes
UfzA	Urban land-Mishawaka complex, 0 to 1 percent slopes
UgaA	Urban land-Morocco complex, 0 to 1 percent slopes
UglA	Urban land-Osolo complex, 0 to 1 percent slopes
UgrA	Urban land-Rensselaer complex, 0 to 1 percent slopes
UgsA	Urban land-Riddles-Oshtemo complex, 0 to 1 percent slopes
UgsB	Urban land-Riddles-Oshtemo complex, 1 to 5 percent slopes
UgvA	Urban land-Tyner complex, 0 to 1 percent slopes
UgvB	Urban land-Tyner complex, 1 to 5 percent slopes
UgvC	Urban land-Tyner complex, 5 to 10 percent slopes
UgvD	Urban land-Tyner complex, 10 to 18 percent slopes
UhmA	Urban land-Hillsdale complex, 0 to 1 percent slopes
UhmB	Urban land-Hillsdale complex, 1 to 5 percent slopes
UhoC	Urban land-Hillsdale-Oshtemo complex, 5 to 10 percent slopes
UhoD	Urban land-Hillsdale-Oshtemo complex, 10 to 18 percent slopes
UhpC	Urban land-Hillsdale-Tracy complex, 5 to 10 percent slopes
UhpD	Urban land-Hillsdale-Tracy complex, 10 to 18 percent slopes
UhwA	Urban land-Martinsville complex, 0 to 1 percent slopes
UhwB	Urban land-Martinsville complex, 1 to 5 percent slopes
UhwC	Urban land-Martinsville complex, 5 to 10 percent slopes
UkaA	Urban land-Maumee complex, 0 to 1 percent slopes
UkeA	Urban land-Milford complex, 0 to 1 percent slopes
UkxA	Urban land-Oshtemo complex, 0 to 1 percent slopes
UkxB	Urban land-Oshtemo complex, 1 to 5 percent slopes
UkxC	Urban land-Oshtemo complex, 5 to 10 percent slopes
UmfB	Urban land-Riddles-Metea complex, 1 to 5 percent slopes
UmfC	Urban land-Riddles-Metea complex, 5 to 10 percent slopes
UmfD	Urban land-Riddles-Metea complex, 10 to 18 percent slopes
UmpA	Urban land-Schoolcraft complex, 0 to 1 percent slopes
UmuA	Urban land-Southwest complex, 0 to 1 percent slopes
UmwA	Urban land-Tracy complex, 0 to 1 percent slopes
UmwB	Urban land-Tracy complex, 1 to 5 percent slopes
UmwC	Urban land-Tracy complex, 5 to 10 percent slopes
UmwD	Urban land-Tracy complex, 10 to 18 percent slopes
UmxA	Urban land-Troxel complex, 0 to 1 percent slopes
UnoA	Urban land-Whitaker complex, 0 to 1 percent slopes
UnqB	Urban land-Williamstown-Crosier complex, 1 to 5 percent slopes
UntA	Urban land-Wunabuna complex, 0 to 1 percent slopes
Usl	Udorthents, rubbish
W	Water, unclassified
WcnAl	Waterford loam, 0 to 2 percent slopes, frequently flooded, long duration
WoaA	Williamstown loam, 0 to 1 percent slopes
WoaB2	Williamstown loam, 1 to 5 percent slopes, eroded
WoaC2	Williamstown loam, 5 to 10 percent slopes, eroded
WobB	Williamstown-Crosier loams, 1 to 5 percent slopes
WrxAN	Wunabuna silt loam, drained, 0 to 1 percent slopes
WtbA	Whitaker loam, 0 to 1 percent slopes
WujB	Williamstown-Moon complex, 1 to 5 percent slopes

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

National, state, or province

County or parish

Field sheet matchline & neatline

OTHER BOUNDARY (label)

Airport, airfield

STATE COORDINATE TICK
1 890 000 FEET

LAND DIVISION CORNER
(section and land grants)

GEOGRAPHIC COORDINATE TICK

ROAD EMBLEM & DESIGNATIONS

Interstate

Federal

State

HYDROGRAPHIC FEATURES

STREAMS

Unclassified

Drainage end

SPECIAL SYMBOLS FOR SOIL SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS

LANDFORM FEATURES

ESCARPMENTS

Other than bedrock

Short steep slope

Depression, closed

EXCAVATIONS

PITS

Gravel pit

MISCELLANEOUS SURFACE FEATURES

Gravelly spot

Marsh or swamp

Sandy spot

Severely eroded spot

Wet spot

Iron accumulation

Muck spot

Marl spot

Unclassified water

Content of organic matter in the surface layer: 2.0 to 4.0 percent
Shrink-swell potential: Low
Depth to seasonal high water table: More than 6.7 feet all year
Hydric soil status: Not hydric
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and moderate for concrete
Surface runoff class: Very low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderately high

UfzA—Urban land-Mishawaka complex, 0 to 1 percent slopes

Setting

Landform: Urban land on outwash plains
Position on the landform: Backslopes, shoulders, and summits

Map Unit Composition

Urban land—50 percent
The excessively drained Mishawaka and similar soils—45 percent
The well drained Elston and similar soils—5 percent

Interpretive Groups

Land capability classification: Urban land—None assigned; Mishawaka—3s
Prime farmland status: Not prime farmland

Properties and Qualities of the Urban Land

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

Properties and Qualities of the Mishawaka Soil

Parent material: Sandy outwash
Drainage class: Excessively drained
Permeability to a depth of 40 inches: Moderately rapid or rapid
Permeability below a depth of 40 inches: Rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.0 to 4.0 percent
Shrink-swell potential: Low
Depth to seasonal high water table: More than 6.7 feet all year
Hydric soil status: Not hydric
Potential for frost action: Low
Hazard of corrosion: Low for steel and moderate for concrete
Surface runoff class: Very low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderately high

UgaA—Urban land-Morocco complex, 0 to 1 percent slopes

Setting

Landform: Urban land on outwash plains
Position on the landform: Backslopes, shoulders, and summits

Map Unit Composition

Urban land—50 percent
The somewhat poorly drained Morocco and similar soils—40 percent
The well drained Osolo and similar soils—4 percent
The poorly drained Gilford and similar soils—3 percent
The poorly drained Maumee and similar soils—3 percent

Interpretive Groups

Land capability classification: Urban land—None assigned; Morocco—3s
Prime farmland status: Not prime farmland

Properties and Qualities of the Urban Land

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

Properties and Qualities of the Morocco Soil

Parent material: Sandy outwash
Drainage class: Somewhat poorly drained
Permeability to a depth of 40 inches: Rapid
Permeability below a depth of 40 inches: Rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 5.1 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Low
Apparent seasonal high water table is highest (depth, months): 0.5 foot (April)
Hydric soil status: Not hydric
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and high for concrete
Surface runoff class: Negligible

Susceptibility to water erosion: Low
Susceptibility to wind erosion: High

UglA—Urban land-Osolo complex, 0 to 1 percent slopes

Setting

Landform: Urban land on outwash plains and outwash terraces
Position on the landform: Backslopes, shoulders, and summits

Map Unit Composition

Urban land—50 percent
The well drained Osolo and similar soils—40 percent
The excessively drained Tyner and similar soils—4 percent
The moderately well drained Brems and similar soils—3 percent
The somewhat excessively drained Coloma and similar soils—3 percent

Interpretive Groups

Land capability classification: Urban land—None assigned; Osolo—3s
Prime farmland status: Not prime farmland

Properties and Qualities of the Urban Land

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

Properties and Qualities of the Osolo Soil

Parent material: Sandy outwash
Drainage class: Well drained
Permeability to a depth of 40 inches: Rapid
Permeability below a depth of 40 inches: Rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 4.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Shrink-swell potential: Low
Apparent seasonal high water table is highest (depth, months): 3.5 feet (January, February, March, April, May, October, November, December)
Hydric soil status: Not hydric
Potential for frost action: Low
Hazard of corrosion: Low for steel and moderate for concrete
Surface runoff class: Negligible
Susceptibility to water erosion: Low
Susceptibility to wind erosion: High

UgrA—Urban land-Rensselaer complex, 0 to 1 percent slopes

Setting

Landform: Urban land in depressions on outwash plains and till plains
Position on the landform: Toeslopes and footslopes

Map Unit Composition

Urban land—50 percent
The poorly drained Rensselaer and similar soils—40 percent
The poorly drained Brookston and similar soils—4 percent
The poorly drained Goodell and similar soils—3 percent
The somewhat poorly drained Whitaker and similar soils—3 percent

Interpretive Groups

Land capability classification: Urban land—None assigned; Rensselaer—2w
Prime farmland status: Not prime farmland

Properties and Qualities of the Urban Land

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

Properties and Qualities of the Rensselaer Soil

Parent material: Fine-loamy outwash
Drainage class: Poorly drained
Permeability to a depth of 40 inches: Moderate
Permeability below a depth of 40 inches: Slow to moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.5 inches to a depth of 60 inches
Content of organic matter in the surface layer: 3.0 to 6.0 percent
Shrink-swell potential: Moderate
Apparent seasonal high water table is highest (depth, months): At the surface (April, May)
Frequency of ponding: Frequent (January, February, March, April, May, December)
Hydric soil status: Hydric
Potential for frost action: High
Hazard of corrosion: Moderate for steel and low for concrete
Surface runoff class: Negligible

Properties and Qualities of the Urban Land

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

Properties and Qualities of the Riddles Soil

Parent material: Loamy till over loamy and/or sandy outwash
Drainage class: Well drained
Permeability to a depth of 40 inches: Moderate or moderately rapid
Permeability below a depth of 40 inches: Very slow to moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.0 percent
Shrink-swell potential: Moderate
Depth to seasonal high water table: More than 6.7 feet all year
Hydric soil status: Not hydric
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and moderate for concrete
Surface runoff class: Low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderately high

Properties and Qualities of the Oshtemo Soil

Parent material: Loamy and/or sandy outwash
Drainage class: Well drained
Permeability to a depth of 40 inches: Moderately rapid or rapid
Permeability below a depth of 40 inches: Rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Low
Depth to seasonal high water table: More than 6.7 feet all year
Hydric soil status: Not hydric
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and low for concrete
Surface runoff class: Very low
Susceptibility to water erosion: Low
Susceptibility to wind erosion: High

UgvA—Urban land-Tyner complex, 0 to 1 percent slopes

Setting

Landform: Urban land on outwash plains
Position on the landform: Backslopes, shoulders, and summits

Map Unit Composition

Urban land—50 percent
The excessively drained Tyner and similar soils—40 percent
The well drained Osolo and similar soils—5 percent
The excessively drained Bristol and similar soils—3 percent
The somewhat excessively drained Coloma and similar soils—2 percent

Interpretive Groups

Land capability classification: Urban land—None assigned; Tyner—3s
Prime farmland status: Not prime farmland

Properties and Qualities of the Urban Land

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

Properties and Qualities of the Tyner Soil

Parent material: Sandy outwash
Drainage class: Excessively drained
Permeability to a depth of 40 inches: Rapid
Permeability below a depth of 40 inches: Rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 4.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Low
Depth to seasonal high water table: More than 6.7 feet all year
Hydric soil status: Not hydric
Potential for frost action: Low
Hazard of corrosion: Low for steel and high for concrete
Surface runoff class: Negligible
Susceptibility to water erosion: Low
Susceptibility to wind erosion: High

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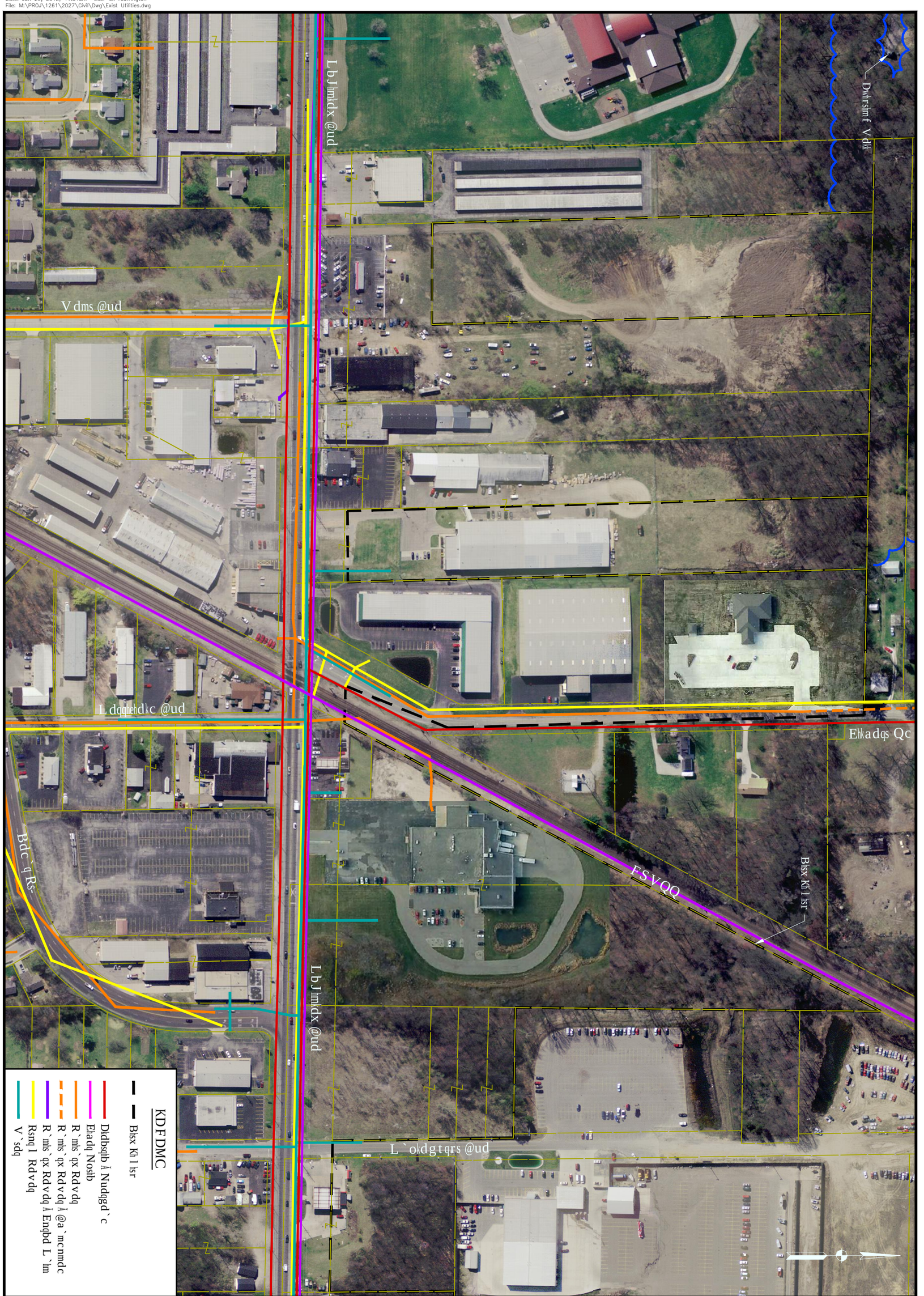

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

EXISTING UTILITIES
McKINLEY AVENUE

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT-12-009
PROJECT NUMBER	1261-2027-90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

DRAWING NUMBER A-5

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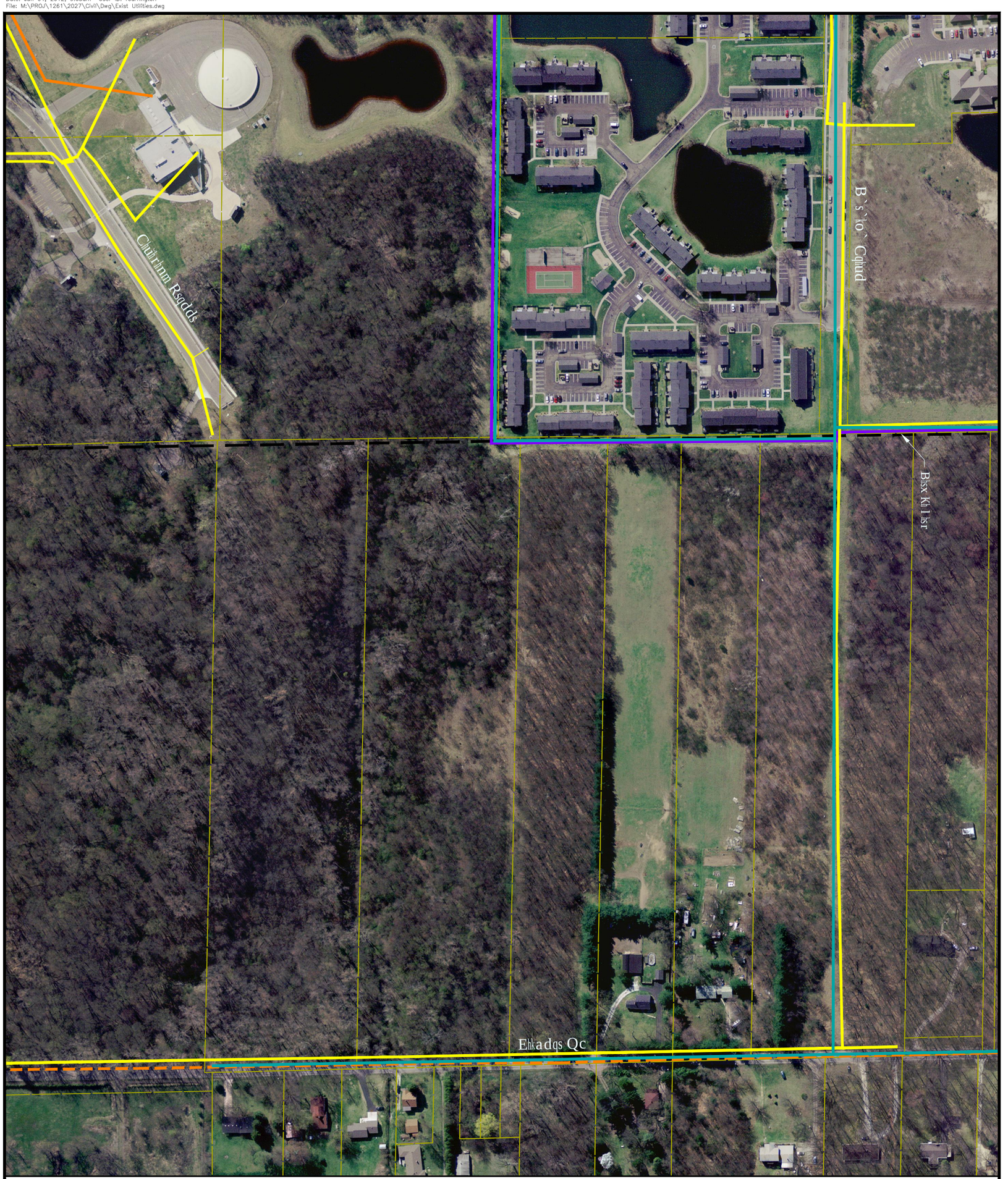

KDF DMC

Bhsx Kd l hsr

Didbqhjb Å Nudqgd`c

Ehadq Nosjb

R`mhs`qx Rdvdq

R`mhs`qx Rdvdq Å @a`mcnmdc

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Rsnq l Rdvdq

V`sdq

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

EXISTING UTILITIES
CATALPA AND DIVISION

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT-12-009
PROJECT NUMBER	1261-2027-90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

DRAWING NUMBER A-6

APPENDIX B

Environmental Considerations

Environmental Considerations

1.0 Red Flag Survey

A Red Flag Survey was conducted primarily based on an April 24, 2012 review of the information available on the IndianaMap Website (http://inmap.indiana.edu/viewer.htm). The limit of this survey was a half-mile Red Flag Survey radius. No field visit of the site was conducted to verify the accuracy of the IndianaMap provided information. Additional information sources used are described below.

Infrastructure (Figure B-2):

Pipelines:
Natural gas pipelines are mapped within the half-mile Red Flag Survey radius. These pipelines are not shown within in the project limits. However the location of all pipelines and utilities in/or near the project area will be considered during project design.

Railroads:
Active and abandoned railroads and railroad crossings are located within the half-mile Red Flag Survey radius. Involvement with these resources will occur due to the nature of this project.

Cemeteries:
Fairview Cemetery is located in the half-mile Red Flag Survey radius. However, there are no cemeteries located in or adjacent to the project limits so the project will have no impact upon cemeteries.

Recreational Facilities**:**
Five (5) recreational facilities were identified in the half-mile Red Flag Survey radius. Of these, only Liberty School is located adjacent to the project limits and will be potentially impacted by project activities.

Schools:
Liberty School is located adjacent to the project limits and will be potentially impacted by project activities. Additional school records are shown in the GIS data but these features are no longer extant.

Water Resources (Figure B-3):

NWI Wetlands:
NWI Wetlands are located within the half-mile Red Flag Survey radius. Due to the presence of potential wetlands in the project area, a Preliminary Wetland Determination was conducted and the results are presented below.

Rivers and Lakes:
Open water (lake) features, and a stream feature are located within the half-mile Red Flag Survey radius. These features are located in the project limits and will be further considered in project design.

Hazardous Materials (Figure B-4):

Underground Storage Tanks:
Fifteen (15) Underground Storage Tanks are located within the half-mile Red Flag Survey radius. One of these sites is located adjacent to the project limits. Additional investigation (ISA or Limited Phase 1) should be conducted on this property to determine project impacts during the design phase.

Leaking UG Storage Tanks:
Fourteen (14) Leaking Underground Storage Tanks are located within the half-mile Red Flag Survey radius. Four of these sites are located adjacent to the project limits. Additional investigation (ISA or Limited Phase 1) should be conducted on these properties to determine project impacts during the design phase.

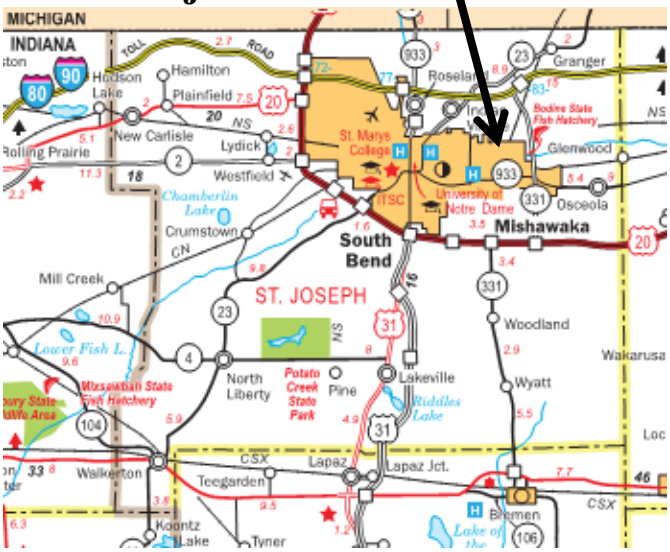
RCRA
Three (3) RCRA sites are located within the half-mile Red Flag Survey radius. None of these sites are located adjacent to the project limit so no impacts to RCRA sites are anticipated.

State Cleanup Sites:
Two (2) State Cleanup Sites are located within the half-mile Red Flag Survey radius. One of these sites is adjacent to the project limits. Additional investigation (ISA or Limited Phase 1) should be conducted on this property to determine project impacts during the design phase.

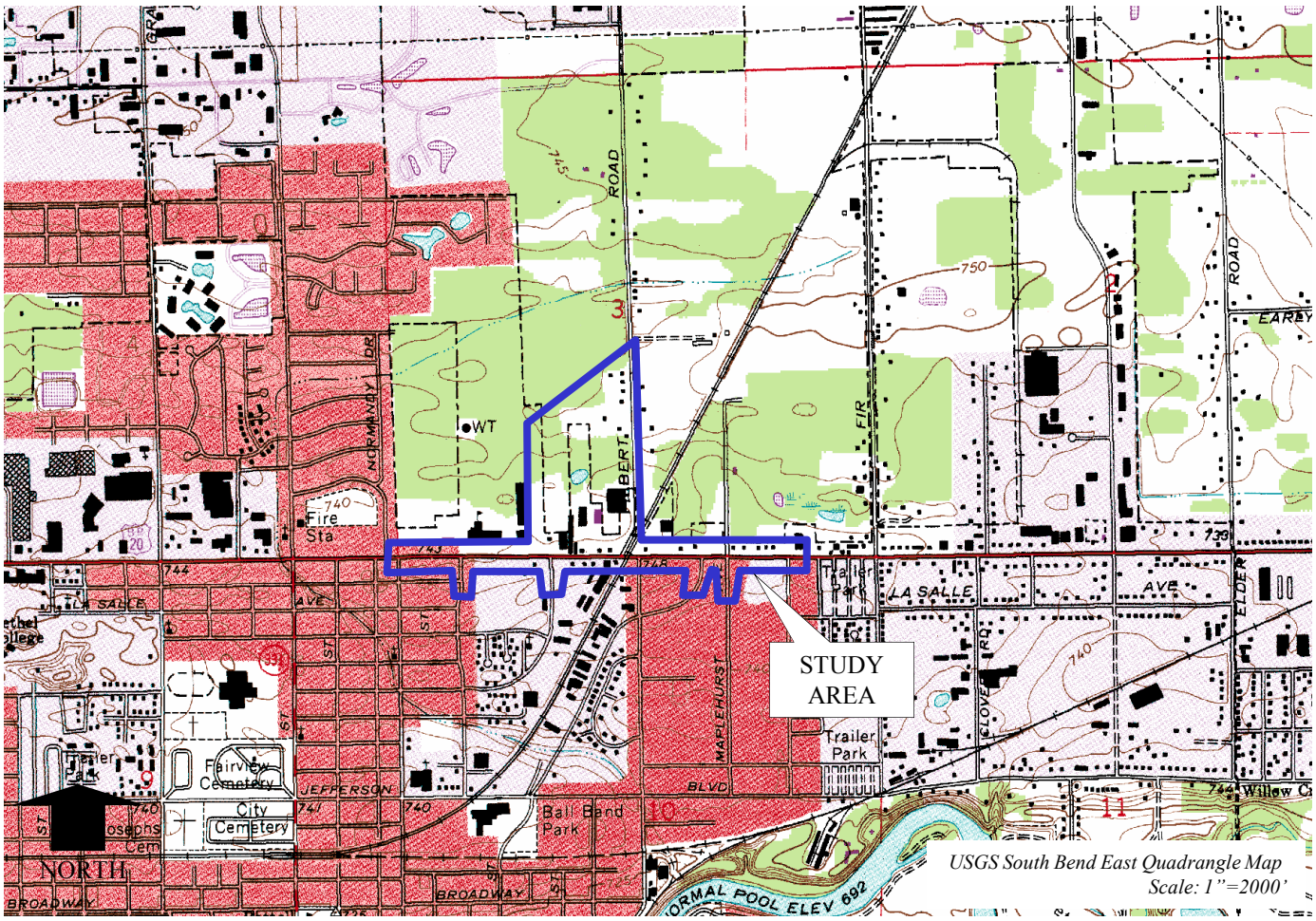
VRP
One VRP site is located within the half-mile Red Flag Survey radius. This site is not located adjacent to the project limit therefore no impacts to this site are anticipated.

St. Joseph County, Indiana

Project Site

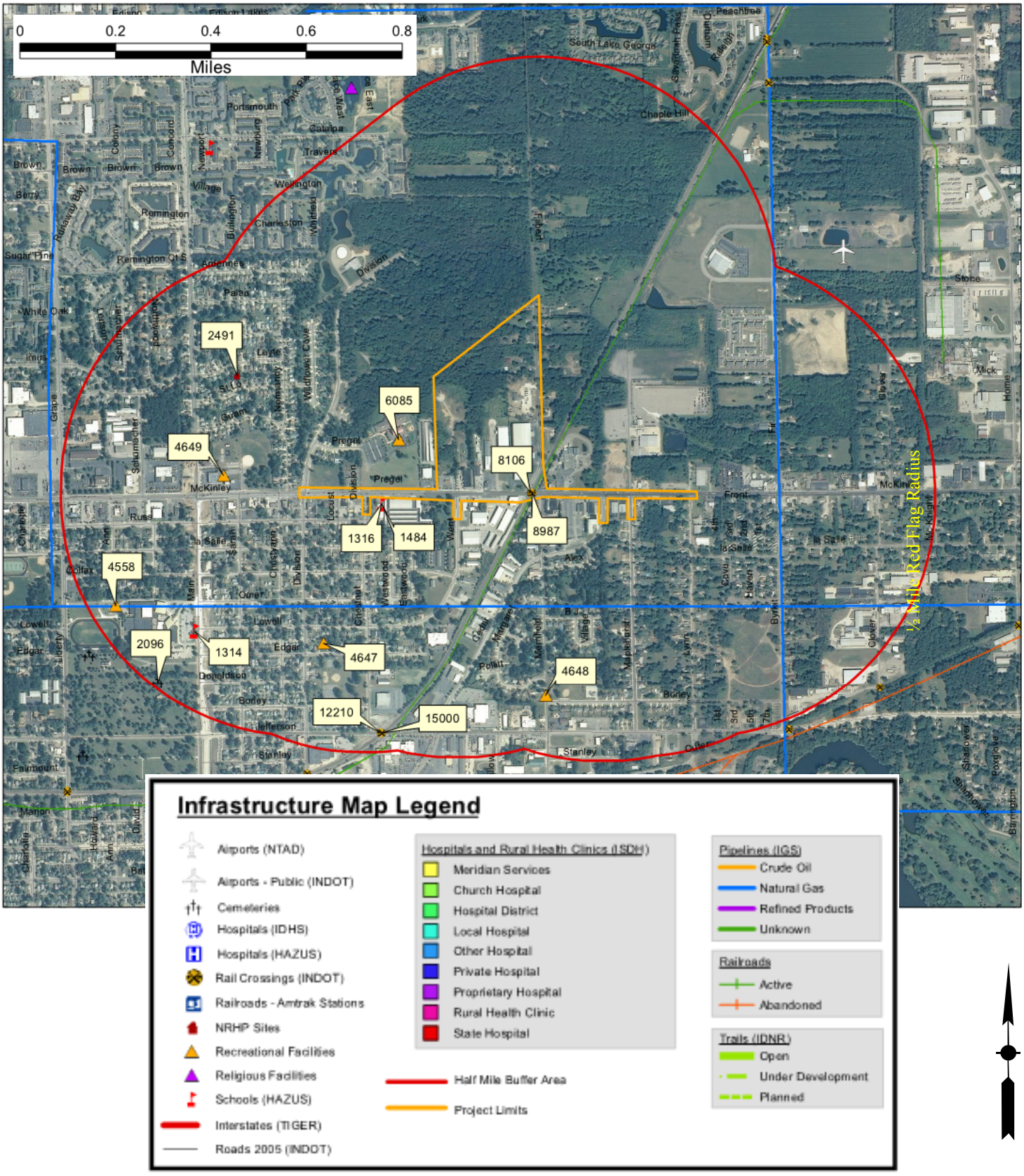


USGS Quadrangle Map



USGS South Bend East Quadrangle Map
Scale: 1"=2000'

DLZ	CITY OF MISHAWAKA McKINLEY AVENUE GRADE SEPARATION STUDY	SCALE: SEE MAP
	PROJECT LOCATION MAP	FIGURE: B-1



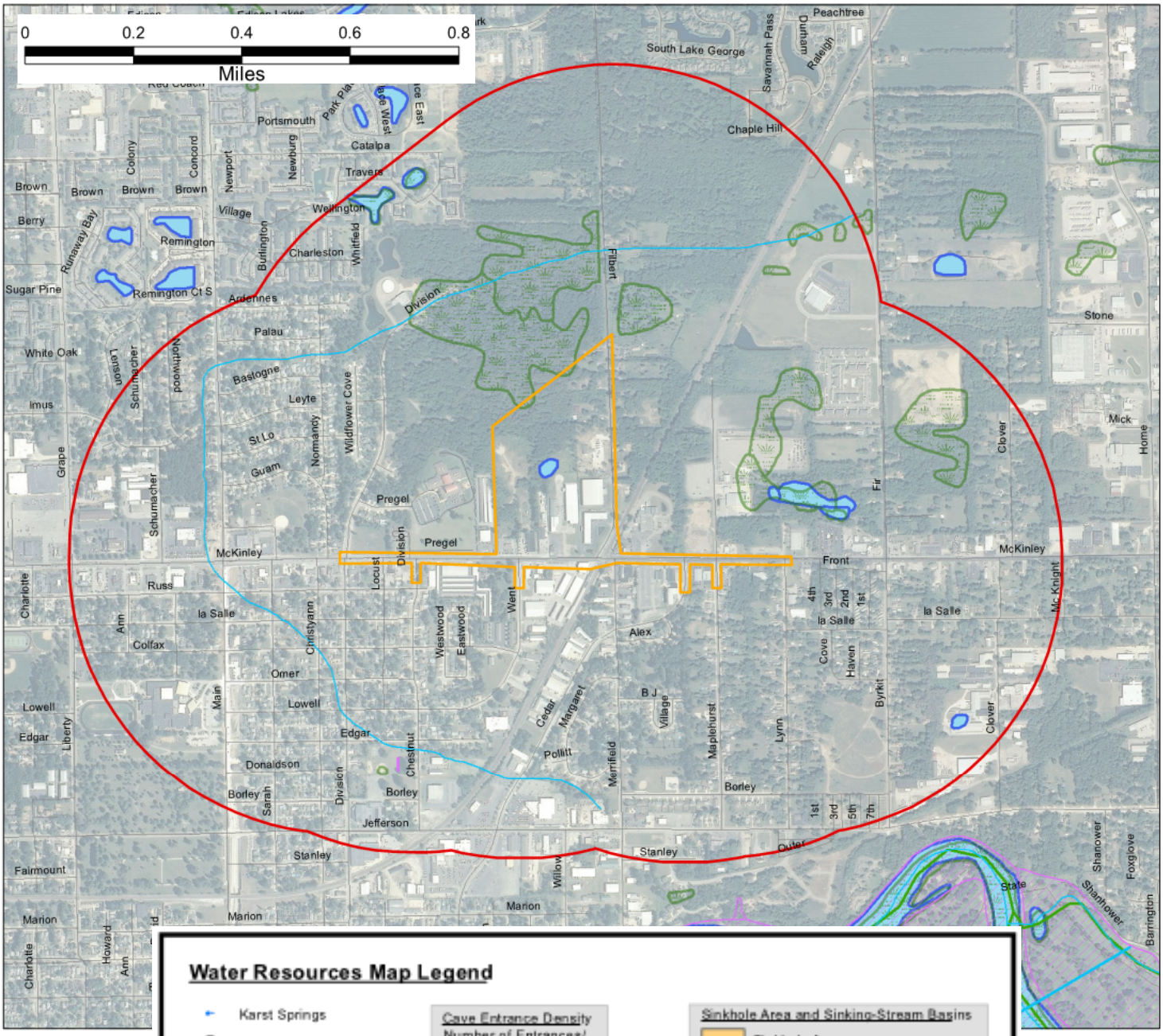
DLZ

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

SCALE:
SEE MAP

INFRASTRUCTURE MAP

FIGURE: B-2



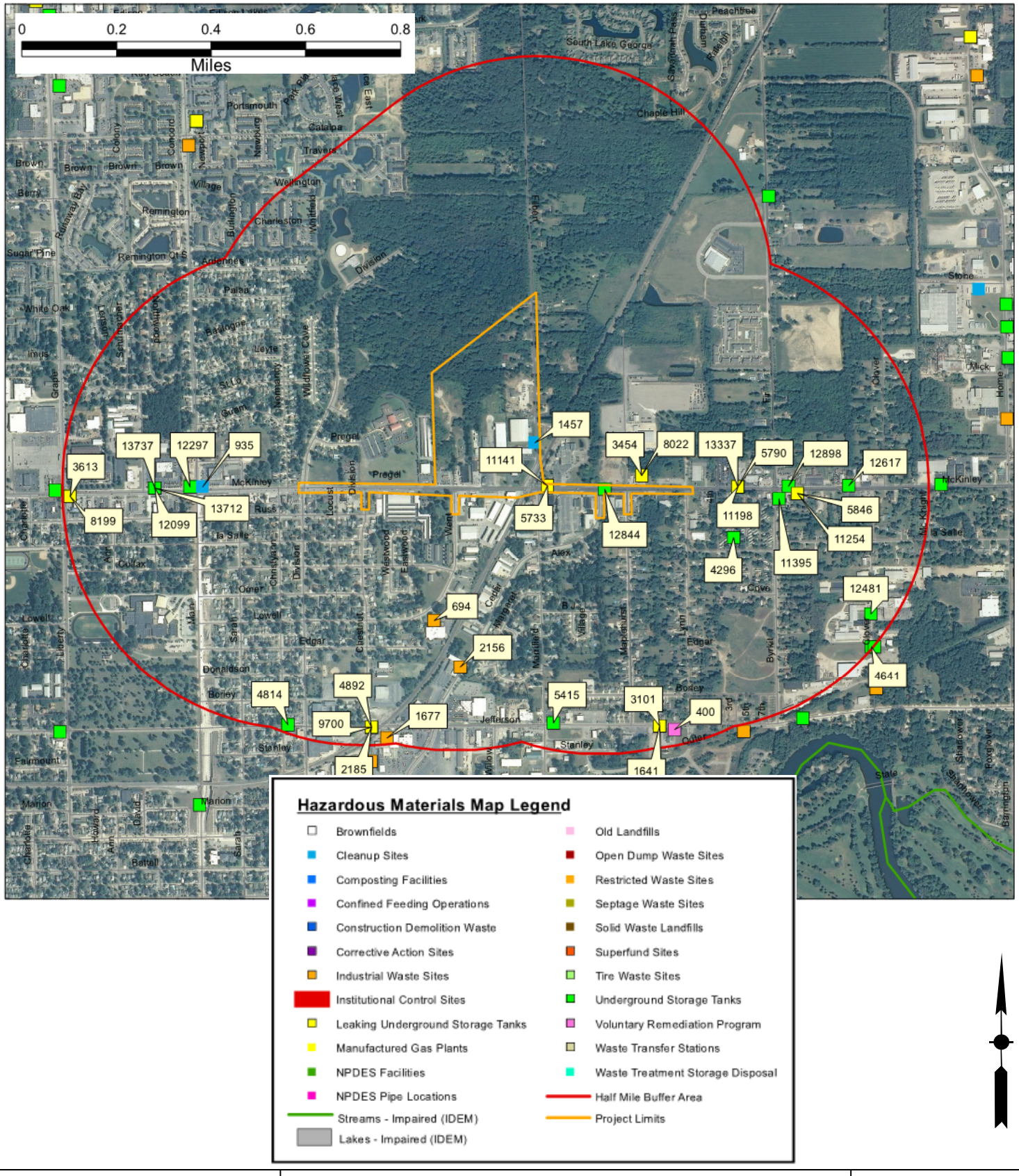
DLZ

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

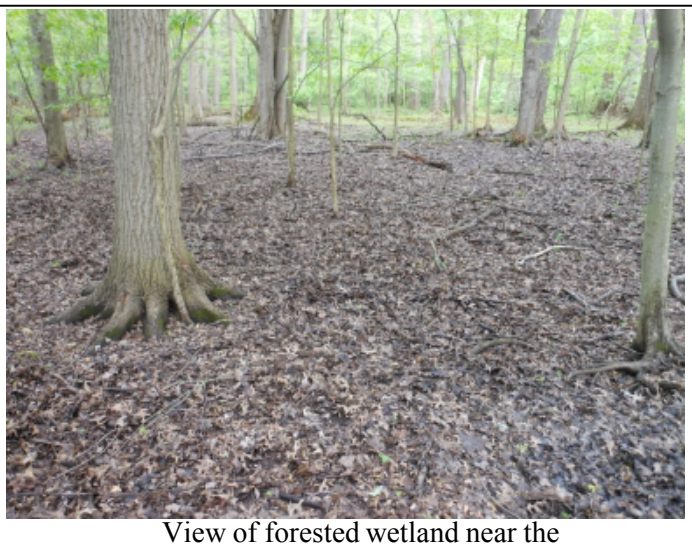
SCALE:
SEE MAP

WATER RESOURCES MAP

FIGURE: B-3



DLZ	CITY OF MISHAWAKA McKINLEY AVENUE GRADE SEPARATION STUDY	SCALE: SEE MAP
	HAZARDOUS MATERIAL CONCERNS MAP	FIGURE: B-4



View of forested wetland near the northeast corner of the study limits

View of forested wetland near the northwest corner of the study limits

View of emergent wetland along private drive

View of Ditch 1

View of Ditch 2

View of Ditch 3

DLZ	CITY OF MISHAWAKA McKINLEY AVENUE GRADE SEPARATION STUDY	SCALE: N/A
	PHOTOGRAPHS	FIGURE: B-5

Hazardous Material Concern Map

ET_ID	PRIMARY_NA	LOCATION_A	Sub_Prog_T
1677	JORDAN FORD	609 E JEFFERSON BLVD	RCRA
2156	JORDAN IMPORT SVC	1605 N CEDAR ST	RCRA
694	ALLIED SCREW PRODUCTS INC	815 E LOWELL AVE	RCRA
935	Jiffy Lube Mishawaka		STATE CLEANUP SITE
1457	Darden Restaurants		STATE CLEANUP SITE
9700	Jordan Motors Inc	609 E Jefferson Blvd	UST
4814	Landsberg Motor Co Inc	314 E Jefferson	UST
5415	Jim Wood Motors	1102 E Jefferson St	UST
4641	Machinery Supply Co Inc	1513 Clover Road	UST
12481	Astro Line Inc	1715 Clover Rd	UST
4296	Shrum's Mobile Home Park	18 N 3rd St	UST
11395	Amoco Eastside		UST
12844	Bob Panak's Gasoline Alley Inc	1309 E Mckinley	UST
12099	Maureen Gillis O'hara	140 W Mckinley	UST
13712	Maureen Gillis O'hara	140 W Mckinley	UST
13737	Maureen Gillis O'hara	140 W Mckinley	UST
12297	Quik Mart #30173	104 Mckinley	UST
13337	Fullmers Service	1554 E Mickinley	UST
12898	Vacant-Former Gas Station	1608 E Mckinley	UST
12617	Knepp Studios	1742 Mckinley	UST
2185	Jordan Motors Inc	609 E Jefferson Blvd	UST/L
1641	Marathon Bp #343	1401 E Jefferson	UST/L
3613	Marathon Oil K & J's		UST/L
5846	Cheker #7297		UST/L
5790	Fullmers Service	1554 E Mickinley	UST/L
5733	Emro Marketing United #6083	1112 E Mckinley St	UST/L
3454	Swifty Service Station #194		UST/L
4892	Jordan Motors Inc	609 E Jefferson Blvd	UST/L
3101	Marathon Bp #343	1401 E Jefferson	UST/L
8199	Marathon Oil K & J's		UST/L
11254	Cheker #7297		UST/L
11198	Fullmers Service	1554 E Mickinley	UST/L
11141	Emro Marketing United #6083	1112 E Mckinley St	UST/L
8022	Swifty Service Station #194		UST/L
400	MARATHON BULK	1401 E Jefferson	VRP

Infrastructure Map

ET_ID	NAME	ADDRESS	
2096	Fairview Cemetery		
2491	Normain Heights Historic Distr		
12210	Rail crossing		
15000	Rail crossing		
8987	Rail crossing		
8106	Rail crossing		
4648	Borley Park	Corner of Borley St and Merrifield Ave	
4647	Temple Park	500 S Edgar	
4558	John J Young Middle School	1801 N Main St	
4649	Normain Park	200 E McKinley US 20 East	
6085	Liberty Elementary School	600 Pregel Dr.	
1314	MISHAWAKA SCHOOLS ELEMENTARY A	1801 N MAIN ST	
1316	MISHAWAKA SCHOOLS ELEMENTARY A	616 E MCKINLEY AVE	
1484	NORTH SIDE ELEMENTARY SCHOOL	616 E MCKINLEY AVE	

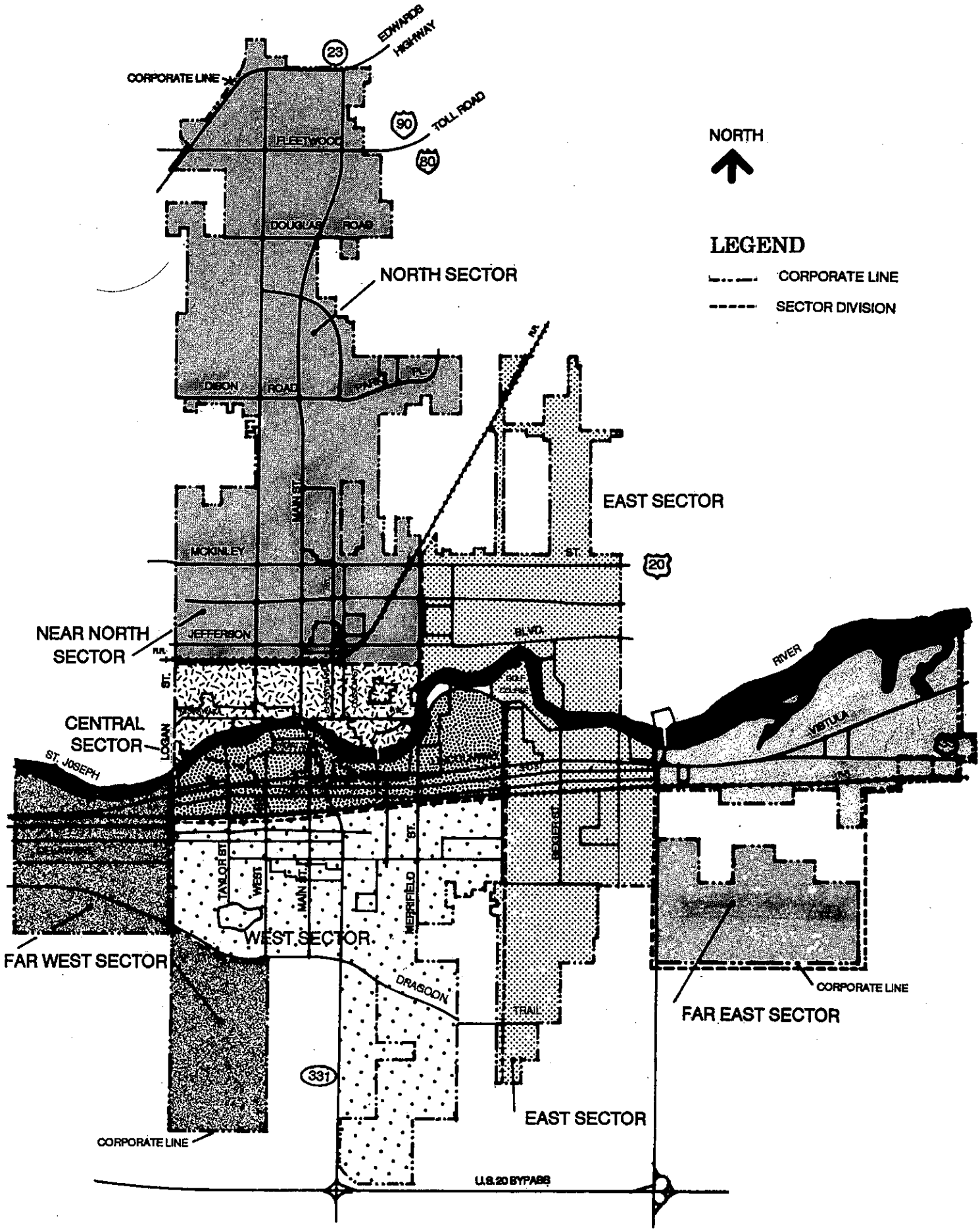
DLZ

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

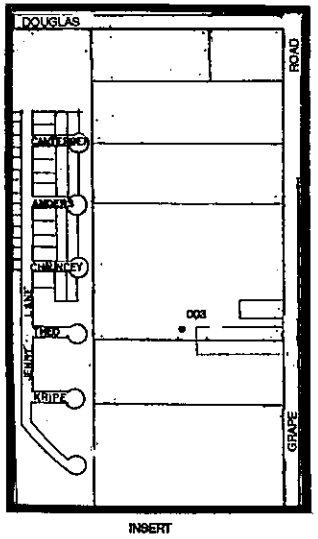
SCALE: N/A

GIS DATA KEY

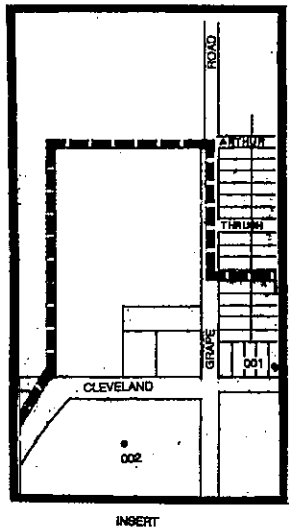
FIGURE: B-6

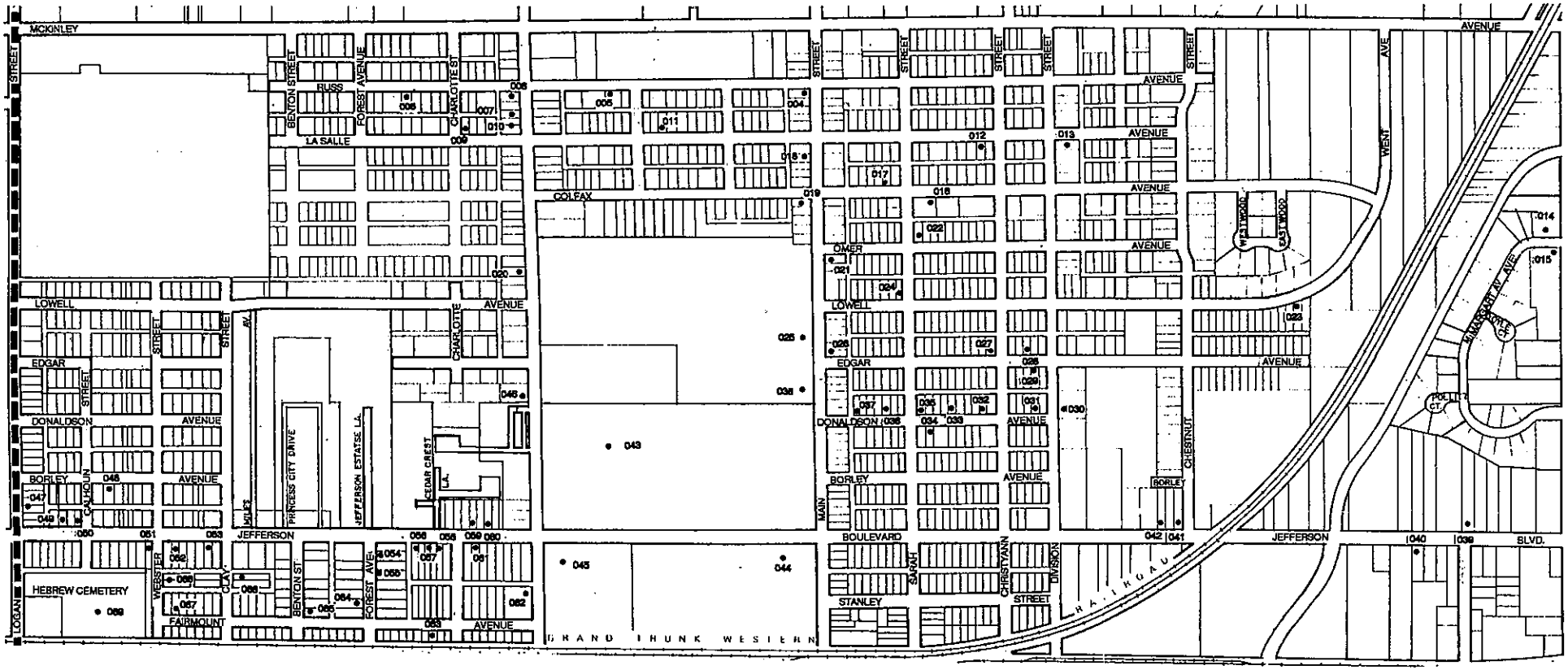

NORTH
LEGEND
CORPORATE LINE
SECTOR DIVISION
EDWARDS HIGHWAY
23
CORPORATE LINE
90
TOLL ROAD
80
FLEETWOOD
DOUGLAS ROAD
NORTH SECTOR
DIXON ROAD
PARK
MAIN ST.
EAST SECTOR
MCKINLEY
20
NEAR NORTH SECTOR
JEFFERSON
BLVD.
RIVER
CENTRAL SECTOR
LOGAN
ST. JOSEPH
VISTULA
TAYLOR ST.
WEST
MAIN ST.
MERRIFIELD
BEGER ST.
WEST SECTOR
FAR WEST SECTOR
DRAGOON
TRAIL
CORPORATE LINE
FAR EAST SECTOR
331
EAST SECTOR
CORPORATE LINE
U.S. 20 BYPASS

NORTH SECTOR SCATTERED SITES (38001-38069)

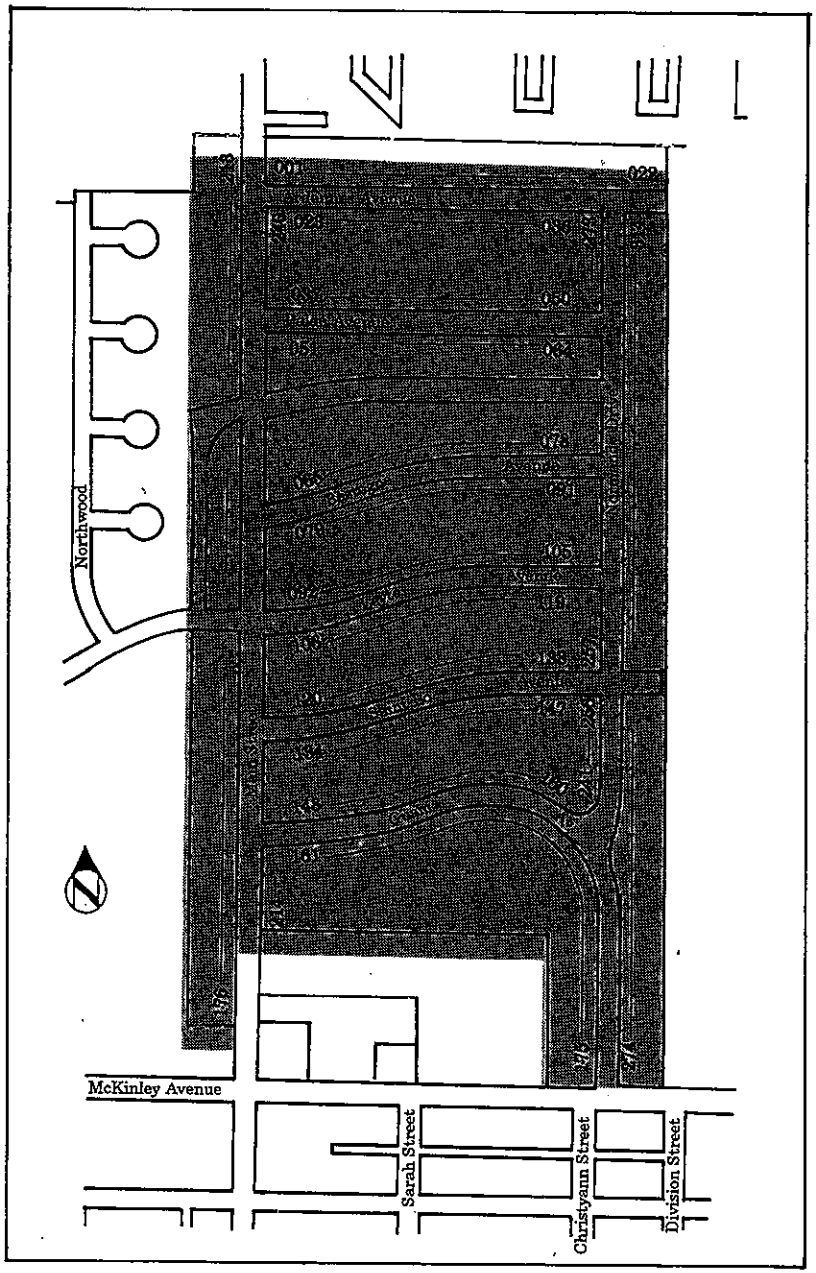


All scattered sites in the sector are located on this map.





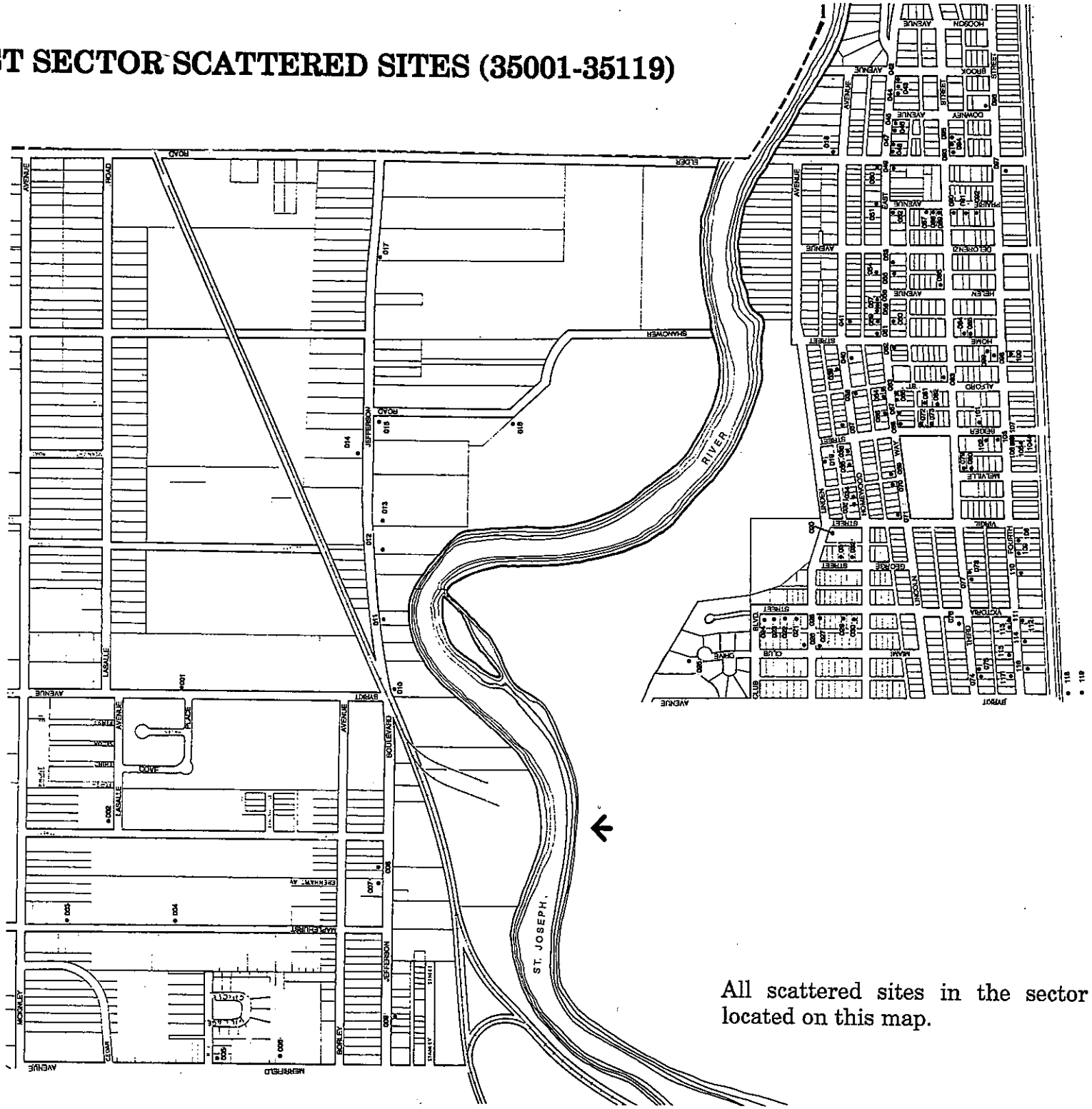
NORMAIN HEIGHTS HISTORIC DISTRICT (36001-36314)



Normain Heights was planned c.1946, at the end of WW II, by veterans and local citizens to provide much needed housing and to commemorate the war. The planned neighborhood included many innovations; an early use of aluminum siding and reinforced concrete. The streets in the complex, which radiate in a slight curve between Main and Normandy, are named after famous WW II battle sites and a commemorative placque is in a median off Normandy Street. Also, standardization of designs were used, to maximize efficiency. The complex is significant as a memorial to the veterans of WW II and its battles.

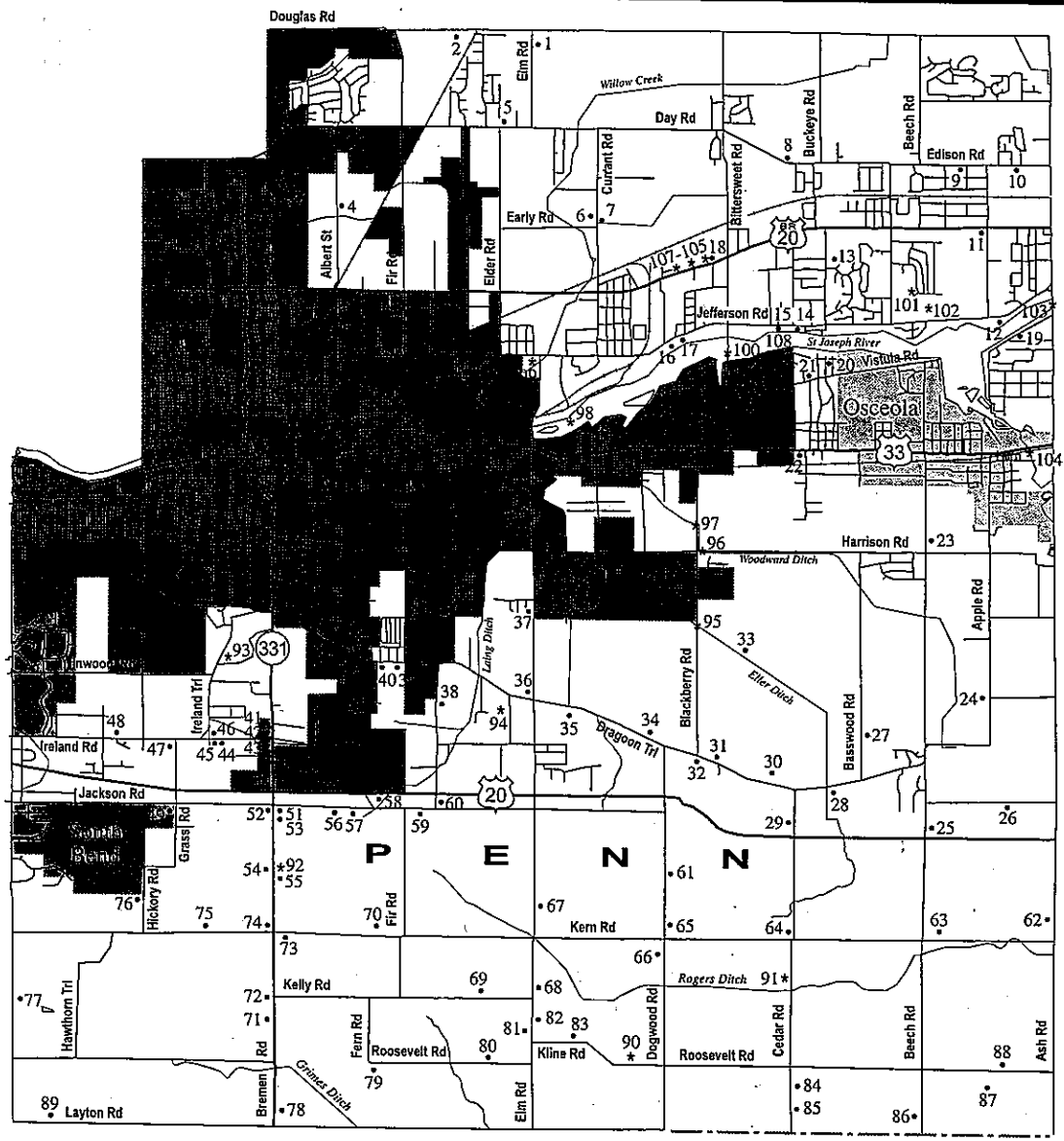
No.	Add.	Description
ARDENNES AVENUE (North Side)		
001	104	**House**, Ranch, c. 1945, (C).
002	108	**House**, Ranch, c.1945, (C).
003	114	**House**, Ranch, c.1945, (C).
004	118	**House**, Ranch, c.1945, (C).
005	122	**House**, Ranch, c.1945, (C).
006	126	**House**, Ranch, c.1945, (C).
007	132	**House**, Ranch, c.1945, (C).
008	136	**House**, Ranch, c.1945, (C).
009	140	**House**, Ranch, c.1945, (C).
010	202	**House**, Ranch, c.1945, (C).
011	208	**House**, Ranch, c.1945, (C).
012	212	**House**, Ranch, c.1945, (C).
013	216	**House**, Ranch, c.1945, (C).
014	222	**House**, Ranch, c.1945, (C).

EAST SECTOR SCATTERED SITES (35001-35119)



All scattered sites in the sector are located on this map.

Penn Township (75001-108)



(*) Indicates newly added sites since the 2000 publication

Penn Township was formed when the St. Joseph County Board divided the county into three townships in 1832. Subsequent subdivisions of Penn Township resulted in the creation of Harris and Madison Townships and parts of Clay, Centre, and Union Townships. Despite the large amount of land removed from Penn Township, it remained the largest township in the county. Its rich lands are among the most fertile in the county, with the St. Joseph River and the Twin Branch and Baugo streams flowing through its boundaries. Through drainage in the late-nineteenth century, the lowlands became tillable.

A unique industry grew from the cultivation of Penn Township's fertile swamp lands, particularly from the La Salle Swamp. It was found that these reclaimed lowlands were perfectly adapted to the cultivation of peppermint. The world's supply of high-grade peppermint oils and flavors eventually came from northern Indiana, southern Michigan, and Wayne County, New York, while the low-grade supply came from Japan. Outstanding farms in the township include the Alfred Curtis Farm (75024) and the Henry Crofoot Farm (75071).

Penn Township settlers came from New England and German communities in Pennsylvania and area farms reflect these different building traditions. The first settlements occurred early, when William and Timothy Moat arrived in 1828. Other early settlers include the Holt, Skinner, Cottrell, Bell, Huntsinger, Macy, Byrkit, Curtis, Ireland, West, Eutzler, Coe, Hollingshead, Edwards, McKnight, Chandler, Webster, and Parks families. The early settlers' public life was to a great extent concentrated near the towns of Mishawaka and Osceola. The city of Mishawaka has its own survey of historic sites and structures, *The City of Mishawaka Summary Report*, not included in this publication.

As in other townships, schools and churches were organized early and early religious congregations

INDIANA ARCHAEOLOGICAL SHORT REPORT

State Form 54566 (1-11)

INDIANA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF HISTORIC PRESERVATION
AND ARCHAEOLOGY
402 West Washington Street, Room W274
Indianapolis, Indiana 46204-2739
Telephone Number: (317) 232-1646
Fax Number: (317) 232-0693
E-mail: dhpa@dnr.IN.gov

Where applicable, the use of this form is recommended but not required by the Division of Historic Preservation and Archaeology.

Author: Mitchell K. Zoll and Kevin M. Zoll

Date *(month, day, year)*: May 21, 2012

Project Title: McKinley Avenue Grade Seperation

PROJECT OVERVIEW

Project Description: The grade seperation of McKinley Avenue and Grand Trunk Central Railroad which will require the relocation of a few roads within the study area. Most of the relocations will take place on areas which have been disturbed by fill and/or industrial building.

INDOT Designation Number/ Contract Number: Feasibility Study -no Des No.

Project Number:

DHPA Number:

Approved DHPA Plan Number:

Prepared For: DLZ

Contact Person: Dan Stevens

Address: 2211 East Jefferson Boulevard

City: South Bend State: IN ZIP Code: 46615

Telephone Number: 574.236.4400 E-mail Address: dstevens @dlz.com

Principal Investigator: Mitchell K. Zoll

Signature: MKZ

Company/Institution: Pioneer Consulting Services, Inc.

Address: 125 E Charles Street, Suite 200

City: Muncie State: IN ZIP Code: 47305

Telephone Number: 765.284.0459 E-mail Address: mzoll2@gmail.com

PROJECT LOCATION

County: St Joseph

USGS 7.5' series Topographic Quadrangle: South Bend East

Civil Township:

Legal Location:

	1/4,		1/4,		1/4,	SW	1/4,	Section:	3	Township:	37N	Range:	3E
	1/4,		1/4,		1/4,	SE	1/4,	Section:	3	Township:	37N	Range:	3E
	1/4,		1/4,		1/4,	NW	1/4,	Section:	10	Township:	37N	Range:	3E
	1/4,		1/4,		1/4,	NE	1/4,	Section:	10	Township:	37N	Range:	3E

Topographic Map Datum: NAD 1983 Grid Alignment: N&W

Comments:

Property Owner:

PROJECT AREA DETAILS

Length meters: unknown feet: Width meters: unknown feet: hectares: Unknown acres:

Natural Region: Northern Lakes Natural Region

Topography: upland flats

Soil Association:

Soils:
UeqA—Urban land-Gilford complex, 0 to 1 percent slopes
UewA—Urban land-Brems-Morocco complex, 0 to 1 percent slopes
UgaA—Urban land-Morocco complex, 0 to 1 percent slopes
UgvA—Urban land-Tyner complex, 0 to 1 percent slopes

Drainage: St. Joseph

Current Land Use: Industry, road, railroad, wooded wetland

Comments: The exact project area and limits are unknown at this time.

RECORDS REVIEW *(check all that apply)*

Date of Records Check *(month, day, year)*: 4/18/2012

☒ SHAARD database ☒ Site Maps on file at DHPA

Previously Reported Sites within One Mile Of the Project *(include Citations)*: none

☐ Cultural Resource Management reports, other research reports, grant reports on file at DHPA or other institutions

Previous Archaeological Studies within One Mile of the Project *(include citations)*:

Maust, Lisa and Donald R. Cochran
1989 Historic Sites from the General Land Office Surveys. Ms on file, Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology.

Shurr, Mark
1991 St. Joseph County Survey, 1991-1992. Ms on file, Indiana Department of Natural resources, Division of Historic Preservation and Archaeology.

List other institutions:

☒ Cemetery Records

Results: Fairview and City Cemeteries are located approximately 1/2 mile SW of the project area.

☐ McGregor Industrial Site records *(in applicable counties)*

Results:

☐ County Interim Report

Results:

☒ Historic Maps

Results: South Bend is west of the project area. Mishawaka is south of the project area.

Anonymous
1876 Illustrated Historical atlas of the State of Indiana. Published by Baskin, Forester and Company, Chicago. Re-printed by the Indiana Historical Society in 1968.

Known Cultural Manifestations and/or Additional Information: All periods of prehistory are recorded within the region. Red Ocher, Goodall, Fisher-Huber and Potawatomi are known from the region.

FIELD INVESTIGATION: *(check all that apply)*

Field Investigation Date(s) *(month, day, year):*

Field Supervisor:

Field Crew:

Surface Visibility:

Factors Affecting Visibility:

Visual Walkover ☐ Pedestrian Survey ☐ Shovel Test ☐ Screened ☐ Mesh Size

Interval 5 m ☐ 10 m ☐ 15 m ☐ Other *(describe below)* ☐

Number of Shovel Test Units Excavated:

Describe Methods:

Attach photographs documenting disturbances below

Describe Disturbances:

Comments:

RESULTS

☐ Archaeological records check has determined that the project area does not have the potential to contain archaeological resources.

☒ Archaeological records check has determined that the project area has the potential to contain archaeological resources.

☐ Phase Ia reconnaissance has located no archaeological resources in the project area.

☐ Phase Ia reconnaissance has identified landforms conducive to buried archaeological deposits.

Actual Area Surveyed hectares: [ ] acres: [ ]

Comments: An unknown amount of right-of-way will be required by the project. Once project plans are finalized, if any areas of previously undisturbed right-of-way are required, then an archaeological field reconnaissance will be required on these areas.

RECOMMENDATION

☒ The archaeological records check has determined that the project area has the potential to contain archaeologic resources and a Phase Ia archaeological reconnaissance is recommended.

☐ The archaeological records check has determined that the project area does not have the potential to contain archaeological resources and no further work is recommended before the project is allowed to proceed.

☐ The Phase Ia archaeological reconnaissance has located no archaeological sites within the project area and it is recommended that the project be allowed to proceed as planned.

☐ The Phase Ia archaeological reconnaissance has determined that the project area includes landforms which have the potential to contain buried archaeological deposits. It is recommended that Phase Ic archaeological subsurface reconnaissance be conducted before the project is allowed to proceed.

☐ The Phase Ia archaeological reconnaissance has determined that the project area is within 100 feet of a cemetery and a Cemetery Development Plan is required per IC-14-21-1-26.5.

Cemetery Name: [ ]

Other Recommendations/Commitments: [ ]

Pursuant to IC-14-21-1, if any archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646.

Attachments

☒ Figure showing project location within Indiana.

☒ USGS topographic map showing the project area *(1:24,000scale).*

☒ Aerial photograph showing the project area, land use and survey methods.

☐ Photographs of the project area.

☐ Project plans *(if available)*

Other Attachments: [ ]

References Cited: [ ]

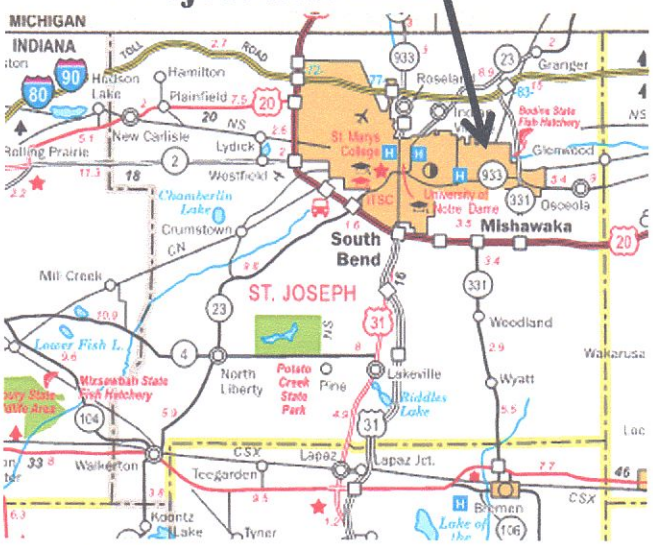
Comments:

Curation

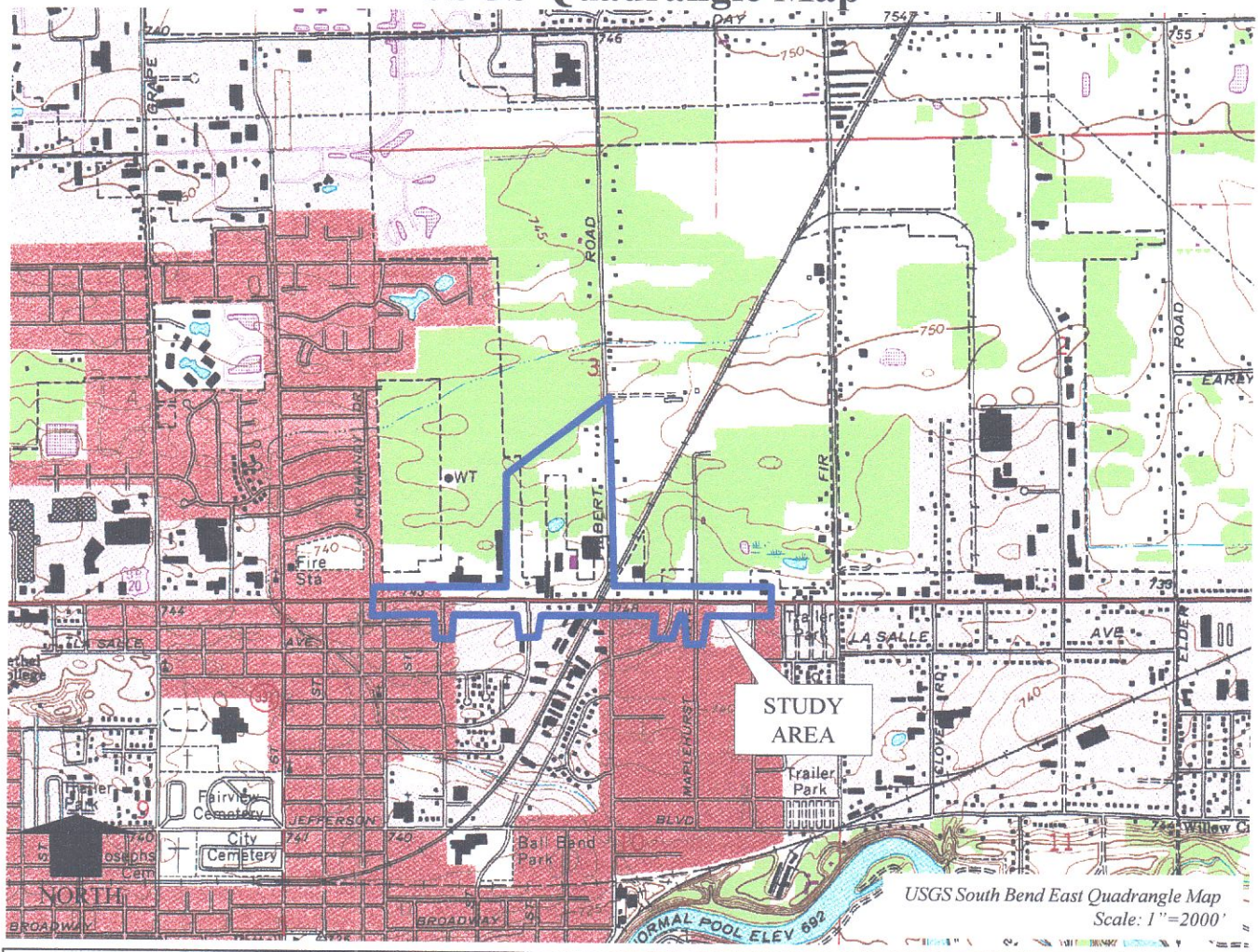
Curation Facility for Project Documentation: Pioneer Consulting

St. Joseph County, Indiana

Project Site



USGS Quadrangle Map



USGS South Bend East Quadrangle Map
Scale: 1"=2000'

DLZ	Engineering Assessment McKinley Avenue Grade Separation At Grand Trunk Western Railroad City of Mishawaka, Indiana	Scale: NTS Figure: 1

Aerial Map

2005 Aerial Background

NORTH

DLZ	Engineering Assessment McKinley Avenue Grade Separation At Grand Trunk Western Railroad City of Mishawaka, Indiana	Scale: see map Figure: 2

DLZ
ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

April 12, 2012

U.S. Fish and Wildlife Service
Ms. Elizabeth McCloskey
PO Box 2616
Chesterton, IN 46204

Re: Engineering Assessment
McKinley Avenue Grade Separation
At Grand Trunk Western Railroad
City of Mishawaka, Indiana
DLZ No.: 1261-2027-90

Dear Interested Party:

The City of Mishawaka is conducting an Engineering Assessment for a project involving a proposed McKinley Avenue Grade Separation at the Grand Trunk Western Railroad. The project is located in Sections 3 and 10, Township 37 North, Range 3 East in the City of Mishawaka and St. Joseph County, Indiana. The purpose of this Engineering Assessment is to develop and study various build-alternatives within the Study Area shown on Figures 1 and 2. Environmental studies will be performed to determine potential project effects upon community, economic and ecological resources.

We are requesting comments per your area of expertise regarding any possible environmental effects associated with this project. **Please use the above description in your reply.** We will incorporate your comments into a study of the project's environmental impacts.

Should a response not be received **within thirty (30) calendar days** from the date of this letter, it will be assumed that your agency feels that there will be no adverse effects incurred as a result of the proposed project. However, should you find that an extension to the response time is necessary; a reasonable amount may be granted upon request.

If you have any questions regarding this matter, please feel free to contact the undersigned (Phone: 574-236-4400). Thank you for your assistance and prompt response to this coordination request.

Very truly yours,

DLZ INDIANA, LLC

Daniel J. Stevens
Environmental Scientist

cc: Mr. Gary E. West, Director of Engineering, City of Mishawaka
Ms. Jessica Clark, P.E., St. Joseph County Engineer
JCZ, GKF,QAA, CGH, RAC, DLZ file
M:\PROJ\1261\2027\Enviro\EC_PKG_TransLtr.doc

DLZ

ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

The following agencies received Early Coordination letters:

State Conservationist
Natural Resource Conservation Service
6013 Lakeside Blvd.
Indianapolis, IN 46278-2933

Environmental Geology Section
Indiana Geological Survey
Email Early Coordination

Regional Environmental Coordinator
Midwest Regional Office
National Park Service
601 Riverfront Drive
Omaha, NE 68102

Environmental Coordinator
Indiana Department of Natural Resources
Email Early Coordination

Indiana Department of Environmental Management
Email Early Coordination

U.S. Fish and Wildlife Service
Ms. Elizabeth McCloskey
PO Box 2616
Chesterton, IN 46204

Sole Source Aquifer Coordinator
Ground Water and Drinking Water Branch
USEPA, Region 5
77 West Jackson Boulevard, WG-15J
Chicago, Illinois 60604

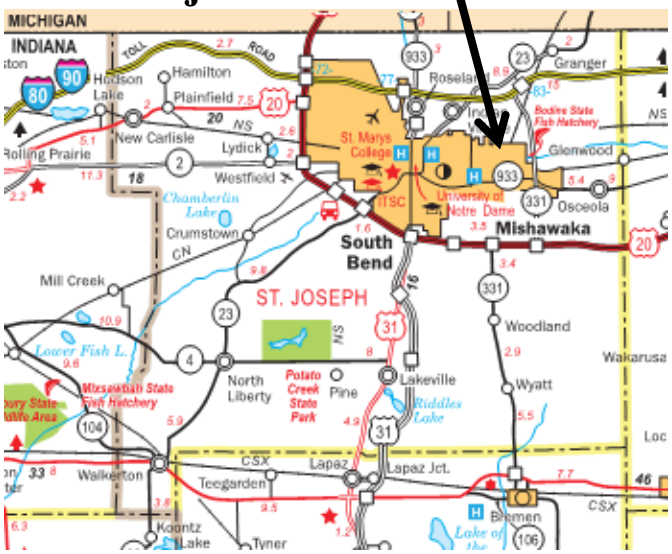
Regional Environmental Officer, Chicago Regional Office
US Department of Housing and Urban Development
Metcalf Federal Building
77 West Jackson Boulevard, Room 2401
Chicago, IL 60604

Chief, Environmental Analysis Branch
Department of the Army
Detroit District, Corps of Engineers
ATTN: CENCE-PD-EA
PO Box 1027
Detroit, Michigan 48231-1027

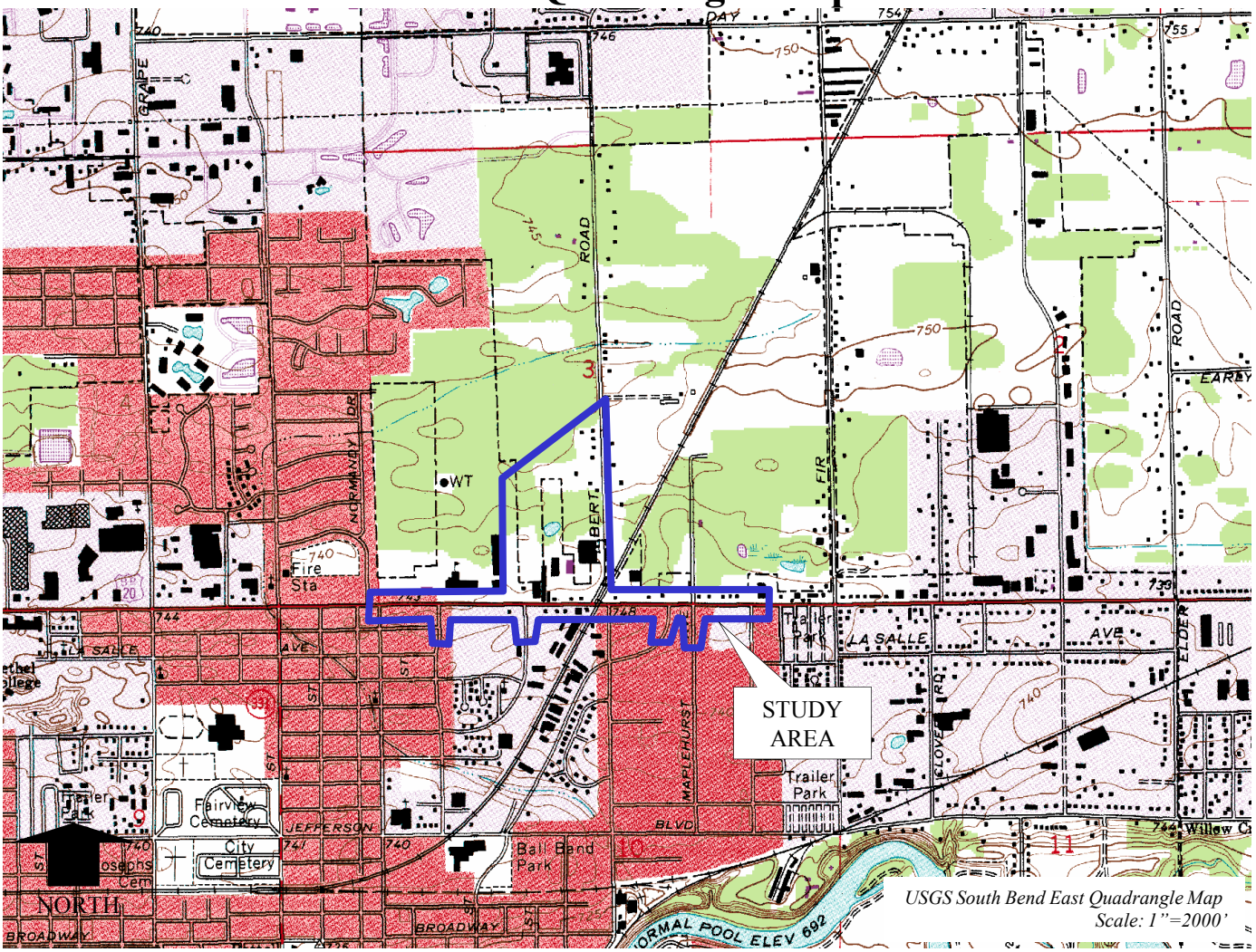
MACOG
227 W Jefferson Blvd # 1120,
South Bend, IN 46601

St. Joseph County, Indiana

Project Site

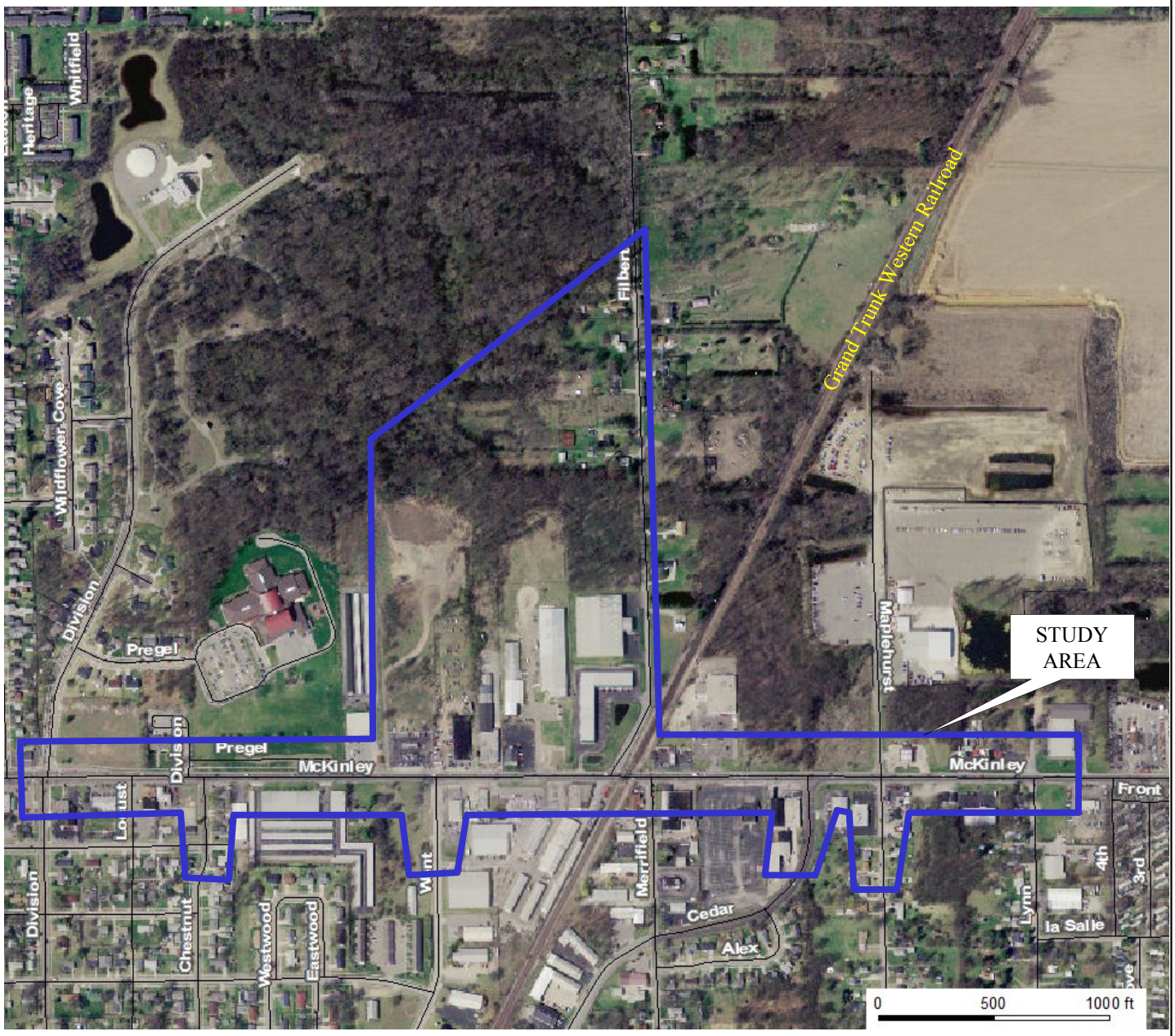


USGS Quadrangle Map



DLZ	Engineering Assessment McKinley Avenue Grade Separation At Grand Trunk Western Railroad City of Mishawaka, Indiana	Scale: NTS Figure: 1

Aerial Map



2005 Aerial Background

NORTH

DLZ	Engineering Assessment McKinley Avenue Grade Separation At Grand Trunk Western Railroad City of Mishawaka, Indiana	Scale: see map Figure: 2

United States Department of the Interior
Fish and Wildlife Service

BLL
ACL
GGH
DJS
File

Bloomington Field Office (ES)
620 South Walker Street
Bloomington, IN 47403-2121
Phone: (812) 334-4261 Fax: (812) 334-4273

May 14, 2012

Mr. Daniel J. Stevens
DLZ Indiana, LLC
2211 East Jefferson Boulevard
South Bend, Indiana 46615

Project No.: DLZ No. 1261-2027-90
Project: McKinley Avenue Grade Separation at Grand Trunk Western Railroad
Location: Mishawaka, St. Joseph County

Dear Mr. Stevens:

This responds to your letter dated April 12, 2012 , requesting our comments on the aforementioned project.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, and the U. S. Fish and Wildlife Service's Mitigation Policy.

An Engineering Assessment is being conducted to investigate various alternatives for a grade separation on McKinley Avenue at the Grand Trunk Western double track on the northeast side of Mishawaka. There presently is no proposed project but there is a study area along approximately a mile of McKinley Avenue and about 2500 feet of Filbert Road, including an area of about 90 acres between these 2 roadways where Filbert Road would apparently need to be relocated. This block of land includes commercial and industrial facilities, residential properties, and woodlands.

According to the National Wetlands Inventory map (South Bend East), the woodlands include forested wetlands; however, we do not know if any of these wetlands are included within the study area. A wetland delineation will be necessary to determine if any wetlands are present.

Trees lost to the project will need to be mitigated. We support the upland woodland mitigation guidelines of the Indiana Department of Natural Resources contained in their Information Bulletin #17 (http://www.in.gov/legislative/register/20061213-IR-312060562NRA.xml.pdf) which states that the standard minimum mitigation ratio for non-wetland forest losses of more than 1 acre is to be 2:1 (2 acres replanted for every acre destroyed), planted as close to the impact site as possible. If the loss involves a total of less than 1 acre of tree removal, 5 trees are to be planted for each tree removed that has a diameter of 10 inches or greater. Wetland mitigation requirements are addressed in this same IDNR document, with the ratio for Palustrine forested wetlands being 4:1.

ENDANGERED SPECIES

The proposed project is within the range of the Federally endangered Indiana bat (Myotis sodalis), the threatened northern copperbelly water snake (Nerodia erythrogaster neglecta), and the candidate eastern massasauga rattlesnake (Sistrurus catenatus catenatus).

These endangered species comments constitute informal consultation only. They do not fulfill the requirements of Section 7 of the Endangered Species Act of 1973, as amended.

We appreciate the opportunity to comment at this early stage of project planning. Please keep us informed of project planning as it progresses. For further discussion, please contact Elizabeth McCloskey at (219) 983-9753 or elizabeth_mccloskey@fws.gov.

Sincerely yours,

Elizabeth S. McCloskey

for Scott E. Pruitt
Supervisor

cc: Christie Stanifer, Environmental Coordinator, Division of Water, Indianapolis, IN
Federal Highway Administration, Indianapolis, IN

THIS IS NOT A PERMIT

State of Indiana
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife

Early Coordination/Environmental Assessment

DNR #: ER-16268 **Request Received:** April 12, 2012

Requestor:
DLZ Indiana LLC
Daniel J Stevens
2211 East Jefferson Boulevard
South Bend, IN 46615-2607

Project: McKinley Avenue grade separation at Grand Truck Western Railroad, Mishawaka; DLZ # 1261-2027-90

County/Site info: St. Joseph

The Indiana Department of Natural Resources has reviewed the above referenced project per your request. Our agency offers the following comments for your information and in accordance with the National Environmental Policy Act of 1969.

Regulatory Assessment: Formal approval by the Department of Natural Resources under the regulatory programs administered by the Division of Water is not required for this project.

Natural Heritage Database: The Natural Heritage Program's data have been checked.
The American Badger (Taxidea taxus), a state species of special concern, has been recorded near the mid-section of the project area.

Fish & Wildlife Comments: Badgers are a wide ranging species that prefer an open, prairie-type habitat, with Indiana being at the eastern edge of their natural range. The range of the badger continues to expand as a result of land-use changes from forest to farmland and open pastureland. Impacts to the American badger or its preferred habitat are unlikely as a result of this project.

We were not able to adequately assess impacts to fish, wildlife, and botanical resources resulting from the grade separation project with the information provided. The potential alternatives are currently being evaluated and have not been determined, so the project could affect multiple roadways and habitat within the area. However, we offer the following preliminary recommendations.

If the grade separation is to occur mainly along McKinley Avenue and at major intersections, impacts to surrounding forested, stream, and wetland habitat should be minimal as most major intersections are surrounded by businesses, grass areas, stormwater ponds, scattered trees, and forested edge habitat. If the grade separation is to expand into undeveloped areas, wetland, riparian, and forested habitat may be impacted. Due to the existing layout, it appears Filbert Road will likely have to be realigned in order to intersect McKinley Avenue, as the current intersection exists in close proximity to the intersection of the road and railway. Elevating the railway should be considered as it would create fewer impacts to surrounding habitat than elevating McKinley Avenue and realigning other roadways. The realignment of Filbert Road may further fragment forested areas, creating additional edge habitat.

Avoid and minimize impacts to fish, wildlife, and botanical resources to the greatest extent possible, and compensate for impacts. We recommend that a mitigation, bank stabilization, revegetation, and/or monitoring plan be developed. The following are recommendations that address potential impacts identified in the proposed project area:

1) Riparian Habitat:
Impacts that remove trees from a non-wetland, riparian area should be mitigated. Impacts to non-wetland forest over one (1) acre should be mitigated at a minimum 2:1 ratio. If less than one acre of non-wetland forest is removed in a rural setting,

replacement should be at a 1:1 ratio based on area. Impacts to non-wetland forest under one (1) acre in an urban setting should be mitigated by planting five trees, at least 2 inches in diameter-at-breast height (dbh), for each tree which is removed that is 10" dbh or greater (5:1 mitigation based on the number of large trees).

A native riparian forest mitigation plan should use at least 5 canopy trees and 5 understory trees or shrubs selected from the Woody Riparian Vegetation list (copy enclosed) or an approved equal. A native riparian forest mitigation plan for impacts of less than one acre in an urban area may involve fewer numbers of species and sizes of trees, depending on the level of impact. Additionally, a native herbaceous seed mixture should be planted consisting of at least 10 species of grasses, sedges, and wildflowers selected from the Herbaceous Riparian Vegetation list (copy enclosed) or an approved equal.

2) Wetland Habitat:
Due to the presence or potential presence of wetlands on site, we recommend contacting and coordinating with the Indiana Department of Environmental Management (IDEM) 401 program and also the US Army Corps of Engineers (USACE) 404 program. Impacts to wetlands should be mitigated at the appropriate ratio (see http://www.in.gov/legislative/register/20061213-IR-312060562NRA.xml.pdf).

All exposed soil areas should be stabilized with temporary or permanent vegetation by November 1. Between November 1 and April 1, all exposed soils idle for longer than 7 days should be stabilized with erosion control blankets or with a bonded fiber matrix hydro-mulch. Sites should be protected from seasonal flooding by keeping traffic areas covered with stone and soil stockpiles seeded, stable and contained with silt fencing.

The additional measures that should be implemented to avoid, minimize, or compensate for impacts to fish, wildlife, and botanical resources, include the following:
1. Revegetate all bare and disturbed areas with a mixture of grasses (excluding all varieties of tall fescue), legumes, and native shrub and hardwood tree species as soon as possible upon completion.
2. Minimize and contain within the project limits all tree and brush clearing and provide the opportunity to utilize cleared trees of firewood and timber size.
3. Do not cut any trees suitable for Indiana bat roosting (greater than 3 inches dbh, living or dead, with loose hanging bark) from April 1 through September 30.
4. Appropriately designed measures for controlling erosion and sediment must be implemented to prevent sediment from entering the stream or leaving the construction site; maintain these measures until construction is complete and all disturbed areas are stabilized.
5. Seed and protect all disturbed slopes that are 3:1 or steeper with erosion control blankets (follow manufacturer's recommendations for selection and installation); seed and apply mulch on all other disturbed areas.
6. Plant five native trees, at least 2 inches in diameter-at-breast height, for each tree which is removed that is ten inches or greater in diameter-at-breast height.
7. Inspect structural erosion and sediment control practices daily and repair as necessary until all construction is complete and disturbed areas are permanently stabilized.
8. Do not excavate or place fill in any riparian wetland.
9. Fill material must be clean, uncontaminated, and free of metal, bricks, blocks, other large debris.

THIS IS NOT A PERMIT

State of Indiana
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife

Early Coordination/Environmental Assessment

Contact Staff: Christie L. Stanifer, Environ. Coordinator, Fish & Wildlife

Our agency appreciates this opportunity to be of service. Please do not hesitate to contact the above staff member at (317) 232-4160 or 1-877-928-3755 (toll free) if we can be of further assistance.

Christie L. Stanifer
Environ. Coordinator
Division of Fish and Wildlife

Date: May 11, 2012

United States Department of Agriculture

NRCS
Natural Resources Conservation Service
6013 Lakeside Blvd.
Indianapolis, IN 46278

April 27, 2012

BLG
ACL
CGH
DJS
File

Daniel J. Stevens
Environmental Scientist
DLZ
2211 East Jefferson Blvd.
South Bend, Indiana 46615

Dear Mr. Stevens:

The proposed McKinley Avenue grade separation project in the City of Mishawaka, St. Joseph County, Indiana, as stated in your letter received April 16, 2012, will not cause a conversion of prime farmland.

If you need further information, please call Lisa Bolton at 317-295-5842.

Sincerely,

Jane E. Hardisty

JANE E. HARDISTY
State Conservationist

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

BJL
ACL
CC-lt
AJS
File

April 24, 2012

Mr. Daniel J. Stevens
Environmental Scientist
DLZ Indiana, LLC
2211 E Jefferson Blvd.
South Bend, IN 46615

Re: Sole Source Aquifer Review / Engineering Assessment
McKinley Avenue Grade Separation – DLZ. No: 1261-2027-90
City of Mishawaka, IN

Dear Mr. Stone:

I have reviewed the information you sent regarding the above referenced project. As described, construction activities for the McKinley Avenue Grade Separation at the Grand Trunk Western Railroad project could pose substantial threats to the St. Joseph Sole Source Aquifer System, a Sole Source Aquifer designated under the authority of the Safe Drinking Water Act, Section 1424(e). Adequate design and monitoring plans should be followed to ensure the protection of the aquifer. We would request that you reserve the opportunity for us to conduct further review of the chosen build alternative for this project, when it becomes fully identified.

At a minimum, we recommend that during construction and operation appropriate safeguards and best management practices for storm water are in place to ensure that ground water is not endangered. Such precautions would include notifying general contractors that the site is sensitive, securing adequate precautions for fueling/servicing large equipment, and developing contingency plans to handle the release of any hazardous materials.

Thank you for your cooperation. If you have any further questions please call me at (312) 886-9262.

Sincerely,

William Spaulding
Sole Source Aquifer Coordinator
Ground Water and Drinking Water Branch

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
477 MICHIGAN AVE.
DETROIT, MICHIGAN 48226-2550

May 15, 2012

IN REPLY REFER TO:

BLG
ACL
CGH
DJS
File

Planning Office
Environmental Analysis Branch

Mr. Daniel J. Stevens
Environmental Scientist
DLZ Indiana, LLC
2211 East Jefferson Blvd.
South Bend, IN 46615

Dear Mr. Stevens:

This letter is in response to your April 12, 2012, request for comments on the proposed McKinley Avenue Grade Separation at the Grand Trunk Western Railroad, City of Mishawaka, St. Joseph County, Indiana (DLZ No. 1261-2027-90). In accordance with our responsibilities, the following comments are provided under our civil works and floodplain management programs.

Our civil works program does not include any current plans to develop waterways in the vicinity of your project; nor do we have any current or proposed flood control studies for the area described in your letter. Review of the applicable Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map indicates that there is no FEMA mapped floodplain in the area of your project (Enclosure). We recommend that you coordinate with county officials and with the Indiana Department of Natural Resources regarding the applicability of a floodplain permit prior to construction. This coordination would help ensure compliance with county and state floodplain management regulations and acts, such as the Indiana Flood Control Act (IC 13-2-22). If you obtain information that any part of your project would in fact impact the flood plain, you should consider other sites. This would be consistent with current Federal policy to formulate projects that, to the extent possible, avoid or minimize adverse impacts associated with use of the floodplain.

Our Regulatory Office is reviewing your project proposal for regulatory compliance pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act, and will provide a jurisdictional determination (JD) in a separate mailing. The JD will address whether a Department of the Army permit may be required for the project. No activities under the Corps of Engineers' regulatory jurisdiction may commence without prior Corps' authorization. The regulatory point of contact is Robert Stout at 313-226-6804. Please refer to file number 2012-00265 when inquiring about this review.

We appreciate the opportunity to comment on the proposed McKinley Avenue Grade Separation at the Grand Trunk Western Railroad, City of Mishawaka, St. Joseph County, Indiana. Questions regarding our regulatory program should be directed to Mr. Donald Reinke, Chief, Compliance and Enforcement Branch, Regulatory Office, at 313-226-6812. Any other questions may be directed to Mr. Paul Allerding of my staff at 313-226-7590 or me at 313-226-2476.

Sincerely,

Charles A. Uhlarik, Chief
Environmental Analysis Branch

Enclosure

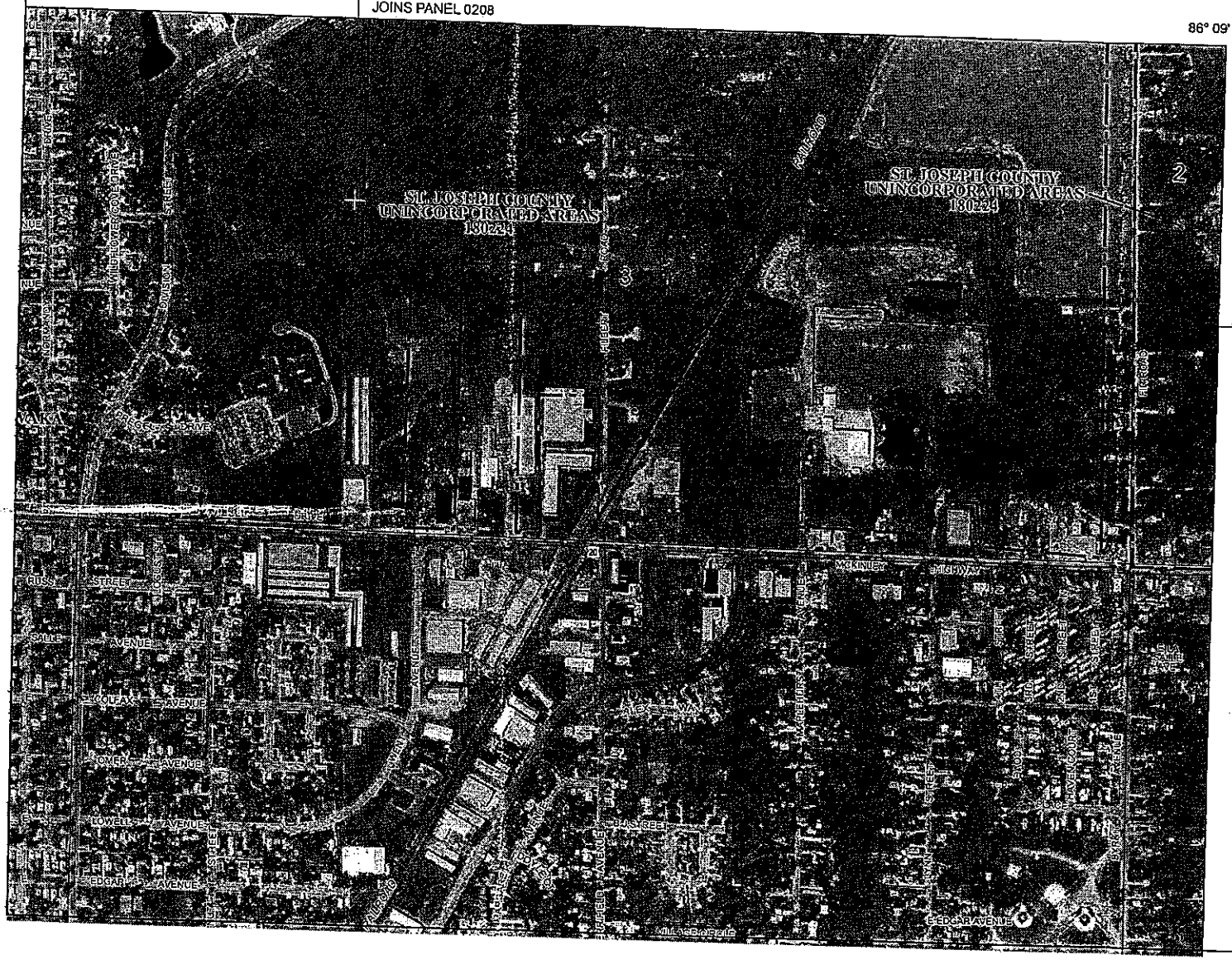
190000 FT

JOINS PANEL 0208

86° 09' 22.5"

41° 41'

46° 15'



MAP SCALE 1" = 500'

250 0 500 1000

FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0216D

FIRM

FLOOD INSURANCE RATE MAP

ST JOSEPH COUNTY, INDIANA

AND INCORPORATED AREAS

PANEL 216 OF 500

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SOUTH BEND, CITY OF	180227	0216	D
ST. JOSEPH COUNTY	180224	0216	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
18141C0216D

EFFECTIVE DATE
JANUARY 6, 2011

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
477 MICHIGAN AVENUE
DETROIT MI 48226-2550

REPLY TO
ATTENTION OF:

May 15, 2012

Engineering & Technical Services
Regulatory Office
File No. LRE-2012-00265-171-J12

BLG
ACL
CGH
DJS w/att
File

Daniel Stevens
DLZ Indiana, LLC
2211 East Jefferson Blvd.
South Bend, Indiana 46615

Dear Mr. Stevens:

This is in response to your letter dated April 12, 2012 regarding the Corps of Engineers' jurisdiction on the proposed McKinley Avenue Grade Separation at the Grand Trunk Western Railroad in Sections 3 and 10, Township 37 North, Range 3 East in the City of Mishawaka, St. Joseph County, Indiana. The project area appears to contain wetlands that are adjacent to an unnamed tributary to the St. Joseph River, which is a water of the United States under the regulatory jurisdiction of the Corps of Engineers.

In this unnamed tributary, as in all waters of the United States, including their adjacent wetlands, any discharge of dredged and/or fill material must be authorized by the Department of the Army. The authority of the Corps of Engineers to regulate the discharge of dredged and/or fill material is contained in Section 404 of the Clean Water Act and regulations promulgated pursuant to that Act. Filling and grading work, mechanized landclearing, the sidecasting of excavated material, and the installation of certain pile-supported structures constitute or otherwise involve discharges of dredged and/or fill material under the Corps' regulatory authority.

If you anticipate discharging dredged and/or fill material in this St. Joseph River tributary and/or its adjacent wetlands, you will need to apply for and receive authorization from the Corps prior to starting such work. We have enclosed copies of the application materials that you will need to complete and submit to us in order to request authorization to perform any activities falling under the Corps' jurisdiction. As described in the application materials, you will need to include plan and cross-section view drawings of your proposed work in 8 1/2 x 11 inch format.

Also enclosed with this letter is a Preliminary Jurisdictional Determination (PJD). This determination advises an interested party that the Corps of Engineers believes there may be waters and/or wetlands of the United States on the property that fall under the Corps' regulatory authority. A PJD enables the Corps and a permit applicant or other affected party to resolve certain jurisdiction and permit issues without expending time on making an official determination of the Corps' jurisdiction. At any time, an applicant/affected party may request an approved jurisdictional determination, which would provide an official determination of jurisdictional waters on a site. An approved jurisdictional determination can be administratively appealed (information regarding the appeals process would be provided to you should the situation arise). If use of a PJD satisfies your needs with respect to the above-discussed activity,

please sign and return a copy of the PJD to our office within 30 days of the date of this letter. Should you not return a signed copy, it will be presumed that you agree with the terms and use of the PJD.

If you have questions, please contact me at the above address, telephone (313) 226-6804 or E-Mail Robert.J.Stout@usace.army.mil. Please refer to File No. LRE-2012-00265-J12 in all future communications with this office.

We are interested in your thoughts and opinions concerning your experience with the Detroit District, Corps of Engineers Regulatory Program. If you are interested in letting us know how we are doing, you can complete an electronic Customer Service Survey from our web site at: **http://per2.nwp.usace.army.mil/survey.html**. Alternatively, you may contact us and request a paper copy of the survey that you may complete and return to us by mail or fax. Thank you for taking the time to complete the survey, we appreciate your feedback.

Sincerely,

Robert J. Stout
Regulatory Project Manager
Compliance and Enforcement Branch

Enclosure

Copy Furnished

IDEM, Office of Water Quality, w/encl.
IDNR, Division of Water, w/encl.
Environmental Analysis Branch, Paul Allerding

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): May 15, 2012

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD: Daniel J. Stevens, DIZ Indiana, LLC, 2211 East Jefferson BLVD., South Bend, Indiana 46615

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:Detroit District, McKinley Avenue - Grand Truck RR, 2012-00265-J12

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: Section 3 and 10, Township 37 North, Range 3 East
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State:Indiana County/parish/borough: St. Joseph City: Mishawaka
Center coordinates of site (lat/long in degree decimal format): Lat. 41.6816984856484° **N**, Long. -86.1690348139776° **W.**
Universal Transverse Mercator: 16
Name of nearest waterbody: Unnamed stream leading to the St. Joseph River

Identify (estimate) amount of waters in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.
Cowardin Class:
Stream Flow:
Wetlands: 3 acres.
Cowardin Class:

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal:

Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: May 15, 2012

☐ Field Determination. Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party

who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:Topo, Aerial Photo.

☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☒ U.S. Geological Survey Hydrologic Atlas: .

- ☐ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name:South Bend East 1:24,000.

☐ USDA Natural Resources Conservation Service Soil Survey. Citation:

.

☒ National wetlands inventory map(s). Cite name:GIS application.

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps: .

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (Name & Date):High Resolution Orthoimagery Spring 2011.

or ☐ Other (Name & Date): .

☐ Previous determination(s). File no. and date of response letter: .

☐ Other information (please specify): .

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

May 15, 2012

Signature and date of Regulatory Project Manager (REQUIRED)

Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

Project No. _____ DLZ # 1261-2027-90

Project Description: McKinley Avenue Grade Separation at Grand Trunk Western Railroad, City of Mishawaka, St. Joseph County, Indiana

Name of Organization requesting early coordination:

DLZ Indiana, LLC

QUESTIONNAIRE FOR THE INDIANA GEOLOGICAL SURVEY

1) Do unusual and/or problem ( ) geographic, ( ) geological, ( ) geophysical, or ( ) topographic features exist within the project limits? Describe:
No, and these improvements should not affect, nor be affected, the geology of the area.

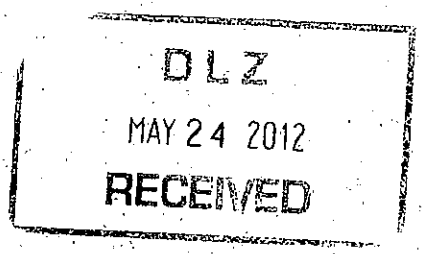
2) Have existing or potential mineral resources been identified in this area? Describe:
None

3) Are there any active or abandoned mineral resources extraction sites located nearby? Describe: None

This information was furnished by:

Name: Robin Rupp Title: Geologist
Address: 611 North Walnut Grove, Bloomington, IN 47405
Phone: 812-855-7428 Date: May 26, 2012

MACOG



BLG
ACL
CGH
DJS
File

May 14, 2012

Daniel J. Stevens
Environmental Scientist
DLZ
2211 E. Jefferson Blvd.
South Bend, IN 46615

RE: Early Coordination Review—McKinley Ave Grade Separation at Grand Trunk Western Railroad
DLZ No.: 1261-2027-90

Dear Mr. Stevens:

The Michiana Area Council of Governments (MACOG) has conducted a preliminary review of the potential project area associated with the above-listed project. Per your correspondence of April 12, 2012, the project is described as McKinley Avenue Grade Separation at the Grand Trunk Western Railroad (Sections 3 and 10, Township 37 North, Range 3 East). The correspondence would indicate that this is a preliminary review, as no detail of the road and shoulder widths and lengths are included.

In reviewing the project area it was determined that some soils in the area, may have some moderate limitations for roads due to a seasonally high watertable based on review of soil survey maps. Google Earth imagery of October 4, 2011 shows standing water on parcels located on the northwest corner of McKinley and Maplehurst Avenues.

It should be noted that widening of the road to accommodate the approaches to the grade separation has the potential to impact current storm water facilities located west of the railroad corridor and north of McKinley, as well as north of McKinley 350-400 feet east of Maplehurst Avenue. Any increase in hard road surface and changes in slopes may result in added storm water runoff. The project should be designed to accommodate for this increase.

Parcels west of Filbert Road have evidence of wetlands that may require onsite delineations to confirm boundaries and potential impact of the project on the wetlands.

Proper permitting shall be obtained if necessary, from the Indiana Department of Environmental Management, the US Army Corps of Engineers, and the local storm water management agency. The project area is located within the St. Joseph Valley Sole Source Aquifer. If federal funds will be used on this project, a review by the US Environmental Protection Agency will be required.

Erosion control structures shall be in place and maintained throughout the construction period to reduce potential impacts to the neighboring waterbodies.

If you have any further questions regarding this review, contact me at 574-287-1829 or sseanor@macog.com.

Sincerely,

Sandra M. Seanor
Executive Director

F:\ABC\MPO\WORKPLAN\2012\w211tiptp_St. Joseph County\Mishawaka\L05km1dstevens1.docx

Michiana Area Council of Governments • 227 W. Jefferson Blvd., Room 1120 • South Bend, IN 46601-1830
574/287-1829 574/674-8894 FAX 574/287-1840
E-mail: macogdir@macog.com Web Site: www.macog.com

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

May 31, 2012

66-33
Mr. Daniel Stevens
DLZ
2211 East Jefferson Boulevard
South Bend, Indiana 46615

Dear Mr. Stevens:

RE: Wellhead Protection Area Proximity Determination
McKinley Grade Separation, Mishawaka, Indiana, St. Joseph County

Upon review of the above referenced site, it has been determined that the site **is located** within a Wellhead Protection Area. Be aware that this project is within the St. Joseph Aquifer System, an EPA designated sole source aquifer system. Contact Bill Spalding at Spaulding.William@epamail.epa.gov for more information/guidance. This information is accurate to the best of our knowledge. However, there are in some cases, a few factors that could impact the accuracy of this determination. For example, some Wellhead Protection Area Delineations have not been submitted or many have not been approved by this office. In these cases, we use a 3,000 foot fixed radius buffer to make the proximity determination. To find the status of a Public Water Supply System's Wellhead Protection Area Delineation, please visit our tracking database at http://www.in.gov/idem/4289.htm.

Note, the Drinking Water Branch has launched a new self service feature which allows one to determine a wellhead proximity without submitting the application form. Use the following instructions: 1) Go to http://idemmaps.idem.in.gov/apps/whpa/ ; 2) Using the icon/tools in the upper right hand corner of the application, zoom to your site location or address; and 3) Once you have located your site of interest click on the "I" icon, and then using your mouse click on your location. The site wellhead protection area proximity determination will be displayed below the icon tools in the upper right hand corner of tool. In the future, please consider using this self service feature if it is suitable for your needs.

If you have any additional questions, please feel free to contact me at the address above or at (317) 234-7476.

Sincerely,

James Sullivan, Chief
Ground Water Section
Drinking Water Branch
Office of Water Quality

APPENDIX C

Typical Sections

Date: Jun 22, 2012, 1:09pm User ID: rcarrington
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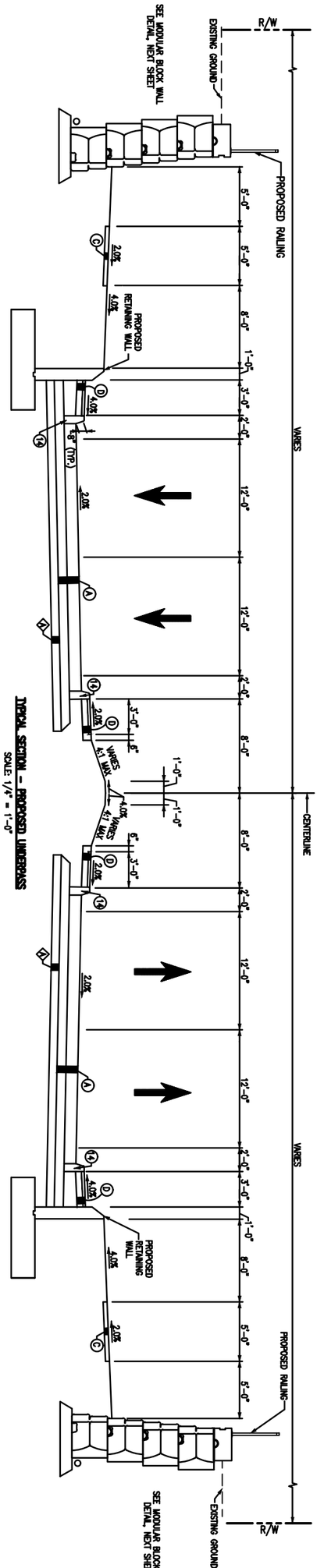
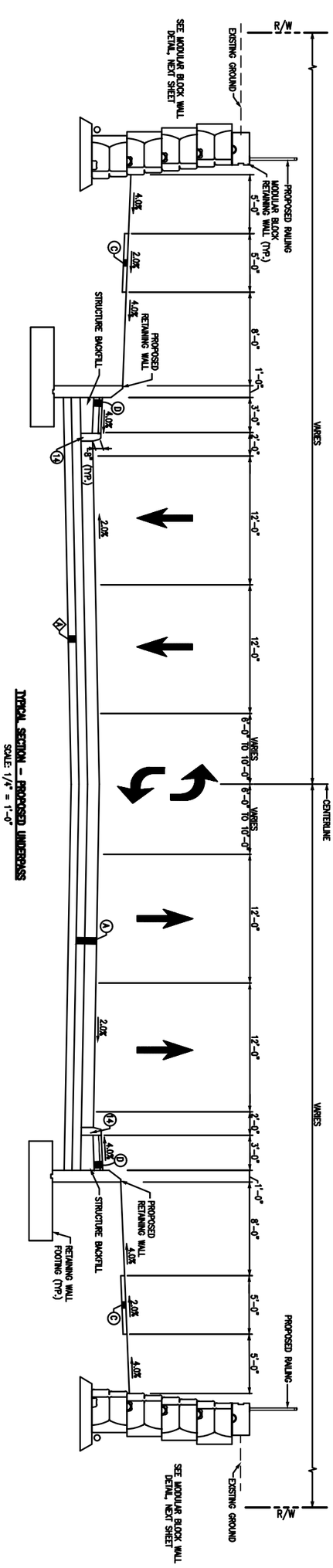
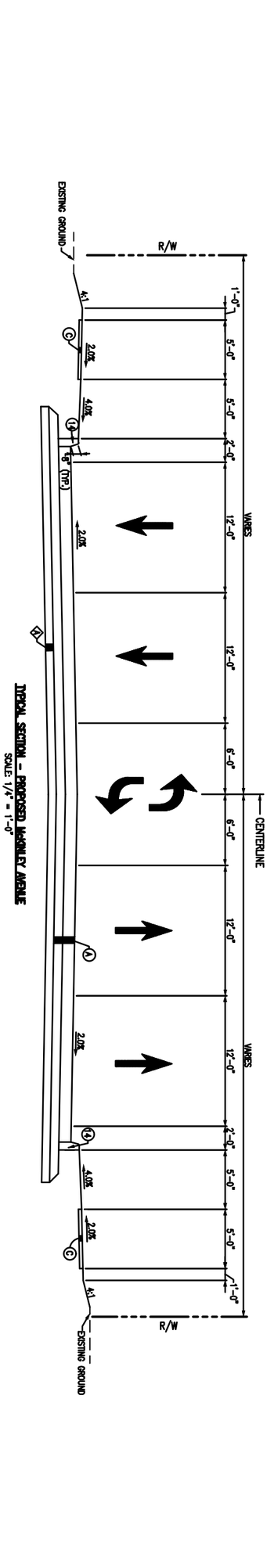






LEGEND

(14)	CONCRETE CURB
(15)	CONCRETE CURB & GUTTER
(A)	PCCP
(B)	HMA PAVEMENT
(C)	SIDEWALK
(D)	CONCRETE PAVERS
(E)	SUBGRADE TREATMENT

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

TYPICAL SECTIONS

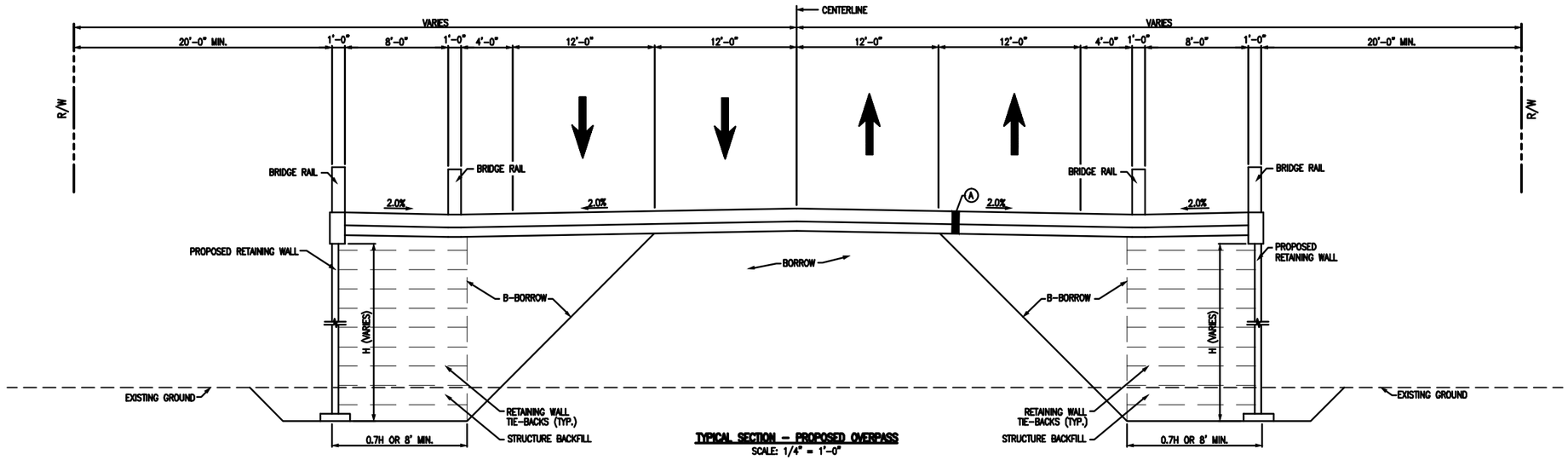
DRAWING NUMBER C – 1

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE:	
CITY PROJECT NUMBER ENT–12–009	
PROJECT NUMBER 1261–2027–90	

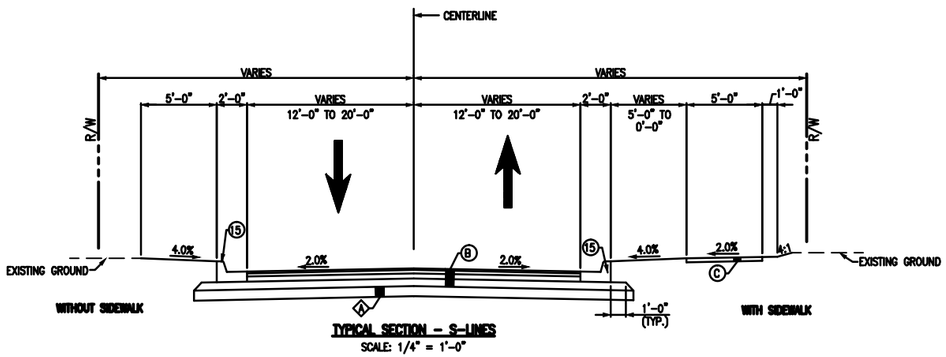
PRELIMINARY STUDY

DLZ INDIANA, LLC

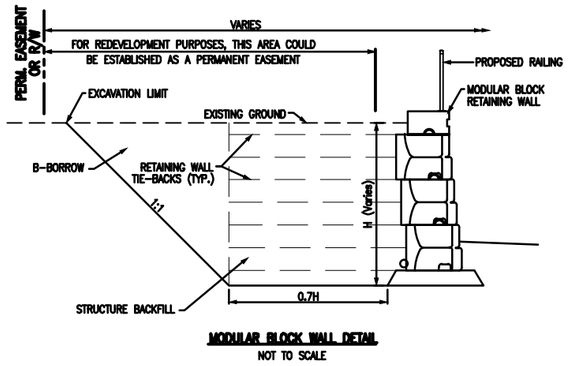
DLZ



TYPICAL SECTION – PROPOSED OVERPASS
SCALE: 1/4" = 1'-0"



TYPICAL SECTION – S-LINES
SCALE: 1/4" = 1'-0"



MODULAR BLOCK WALL DETAIL
NOT TO SCALE

LEGEND

- (14) CONCRETE CURB
- (15) CONCRETE CURB & GUTTER
- (A) PCCP
- (B) HMA PAVEMENT
- (C) SIDEWALK
- (D) CONCRETE PAVERS
- ◇A SUBGRADE TREATMENT

DLZ

PRELIMINARY STUDY

DLZ INDIANA, LLC

DRAWN: AMB CHK'D. RMC
DESIGNED: RMC APPRV'D: GA
DATE: JUNE 2012
SCALE:

CITY PROJECT NUMBER
ENT-12-009

PROJECT NUMBER
1261-2027-90

INDIANA

MISHAWAKA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

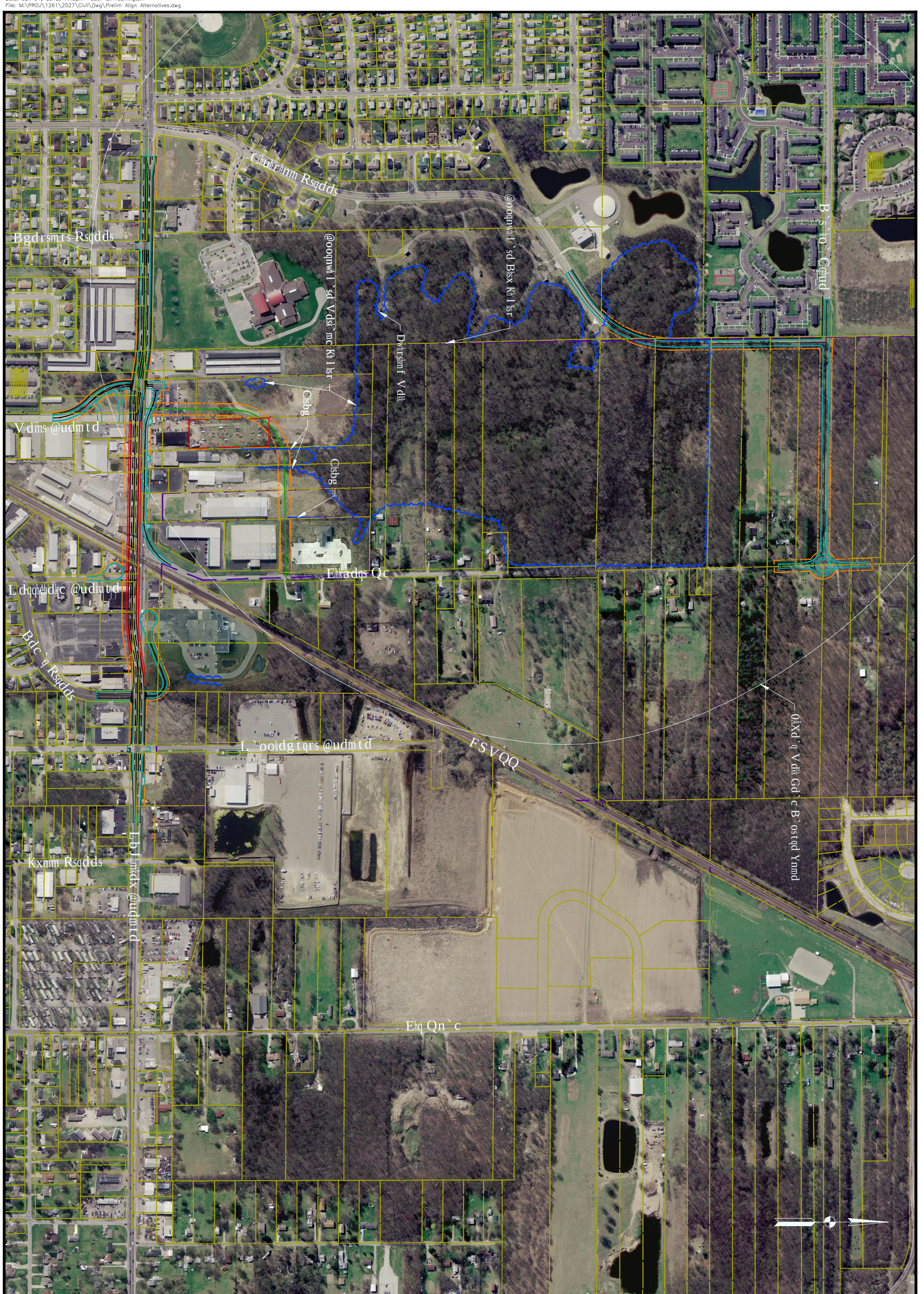
TYPICAL SECTIONS

DRAWING NUMBER
C-2

APPENDIX D

Conceptual Drawings

Date: Jun 01, 2012, 7:10pm User ID: rcarrington
File: M:\PROJ\1261\2027\Civil\Dwg\Prelim Align Alternatives.dwg



MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

CONCEPTUAL DRAWING
OVERALL

DRAWING NUMBER 1

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 500'	
CITY PROJECT NUMBER	ENT-12-009
PROJECT NUMBER	1261-2027-90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

Date: Jun 01, 2012, 12:52pm User ID: aglenn
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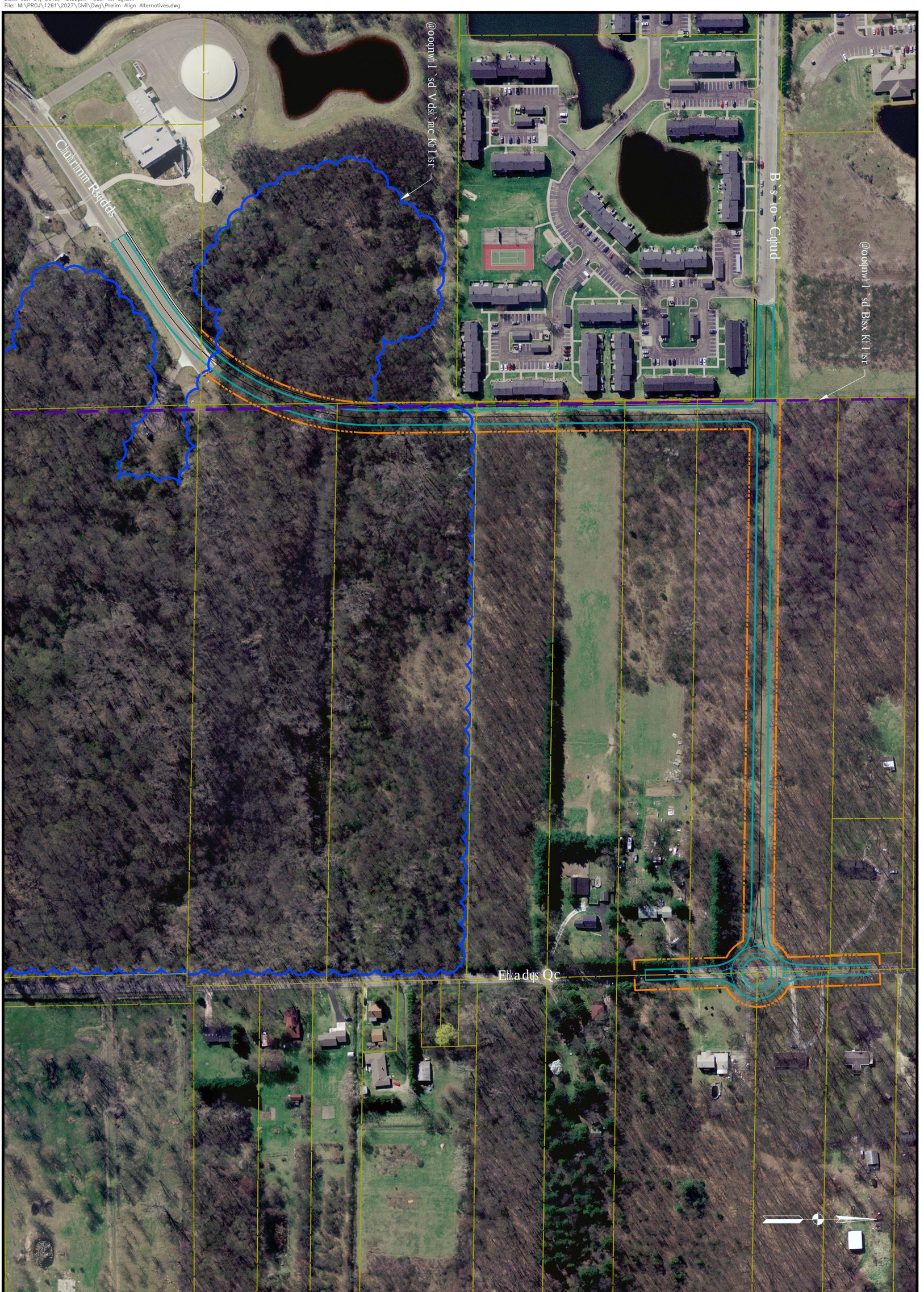

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

CATALPA AND DIVISION

DRAWING NUMBER D-2

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER ENT-12-009	
PROJECT NUMBER 1261-2027-90	

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

Date: Jun 01, 2012, 12:53pm User ID: aglenn
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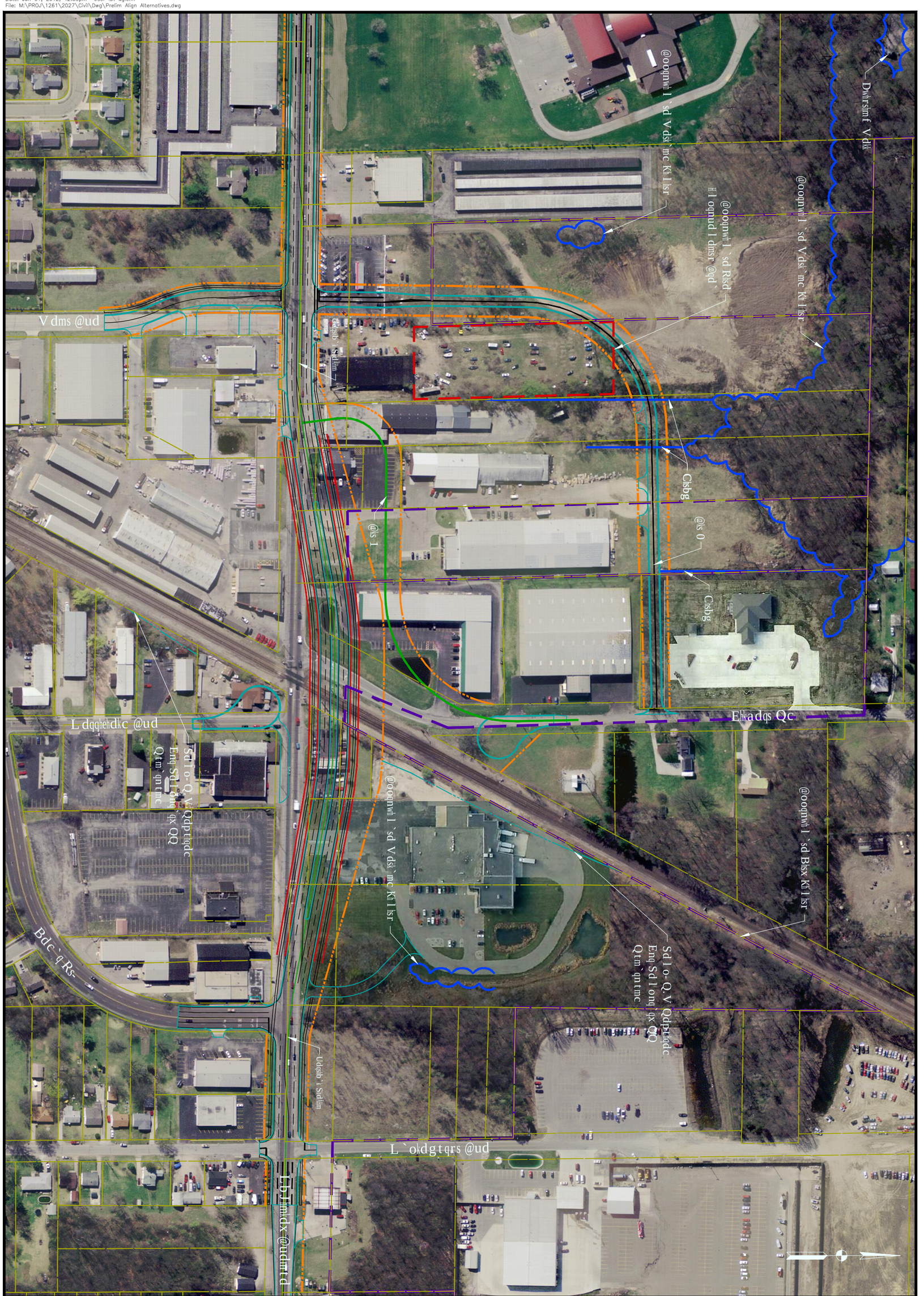

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

UNDERPASS
NORTH SHIFT

DRAWING NUMBER D-3

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT-12-009
PROJECT NUMBER	1261-2027-90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

Date: Jun 01, 2012, 12:53pm User ID: aglenn
File: M:\PROJ\1261\2027\Civil\Dwg\Prelim Align Alternatives.dwg

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

UNDERPASS
SOUTH SHIFT

DRAWING NUMBER D-4

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT-12-009
PROJECT NUMBER	1261-2027-90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

Date: Jun 01, 2012, 12:54pm User ID: aglenn
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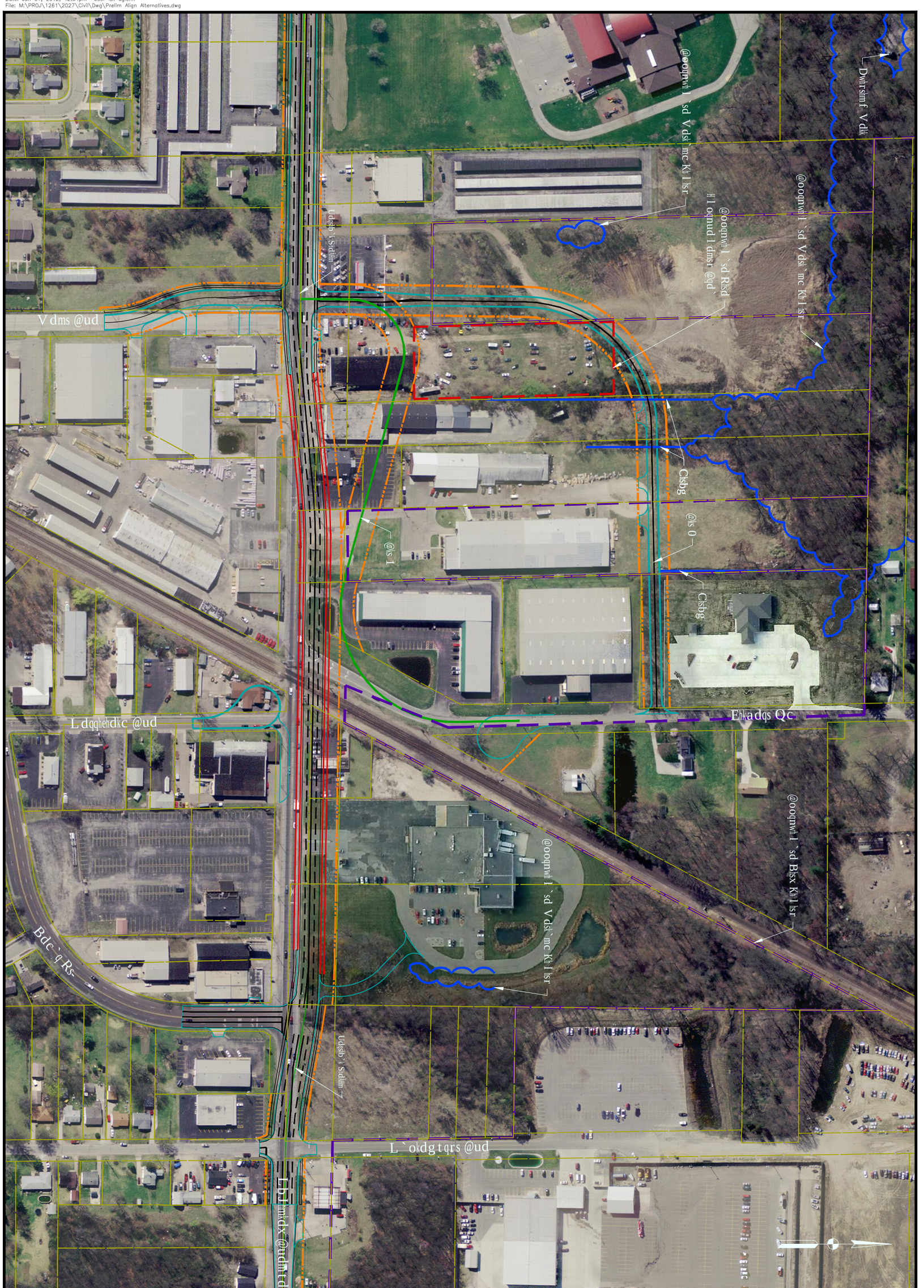

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

OVERPASS
NORTH SHIFT

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT-12-009
PROJECT NUMBER	1261-2027-90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DRAWING NUMBER D-5

DLZ

Date: Jun 01, 2012, 12:54pm User ID: aglenn
File: M:\PROJ\1261\2027\Civil\Dwg\Prelim Align Alternatives.dwg

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

OVERPASS
SOUTH SHIFT

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT-12-009
PROJECT NUMBER	1261-2027-90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DRAWING NUMBER D-6

DLZ

Date: Jun 02, 2012, 2:03pm User ID: qasghar
File: M:\PROJ\1261\2027\Civil\Dwg\Prelim Align Alternatives.dwg

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

TEMPORARY RAIL ROAD RUN AROUND

DRAWING NUMBER D-7

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT-12-009
PROJECT NUMBER	1261-2027-90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

APPENDIX E

Sanitary Sewer and Water Utilities

Date: Jun 01, 2012, 2:50pm User ID: jjay
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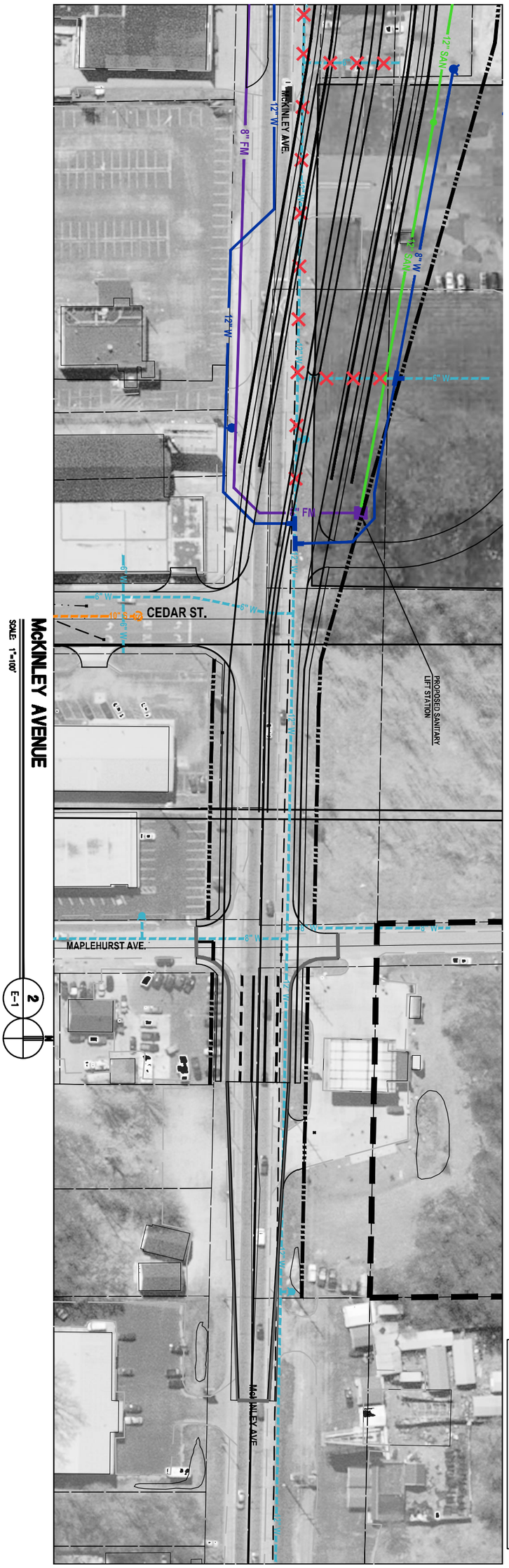

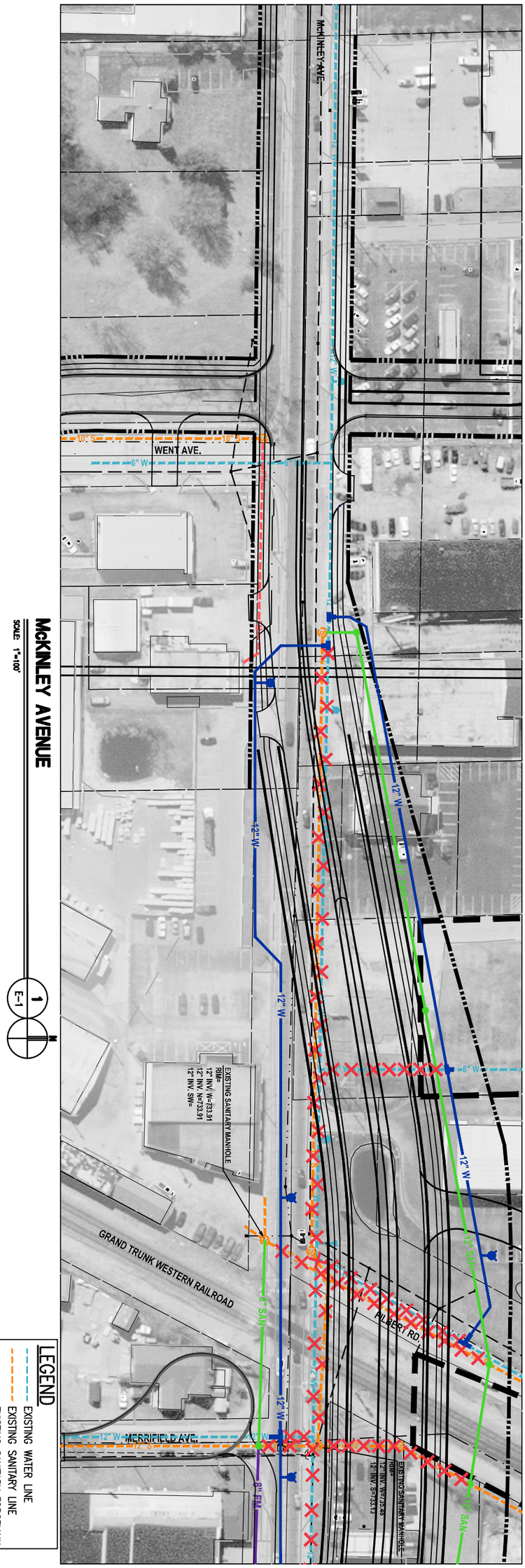

LEGEND

- EXISTING WATER LINE
- EXISTING SANITARY LINE
- EXISTING SANITARY FORCEMAIN
- ITEMS TO BE DEMOLISHED
- PROPOSED WATER
- PROPOSED SANITARY LINE
- PROPOSED FORCE MAIN

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

WATER AND SANITARY RELOCATION
NORTH UNDERRPASS

DRAWING NUMBER E-1

DRAWN: JNJ	CHK'D. ACL
DESIGNED: SJM	APPRV'D: ACL
DATE: JUNE 2012	
SCALE:	
CITY PROJECT NUMBER ENT-12-009	
PROJECT NUMBER 1261-2027-90	

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

Date: Jun 01, 2012, 11:29am User ID: cstumpf
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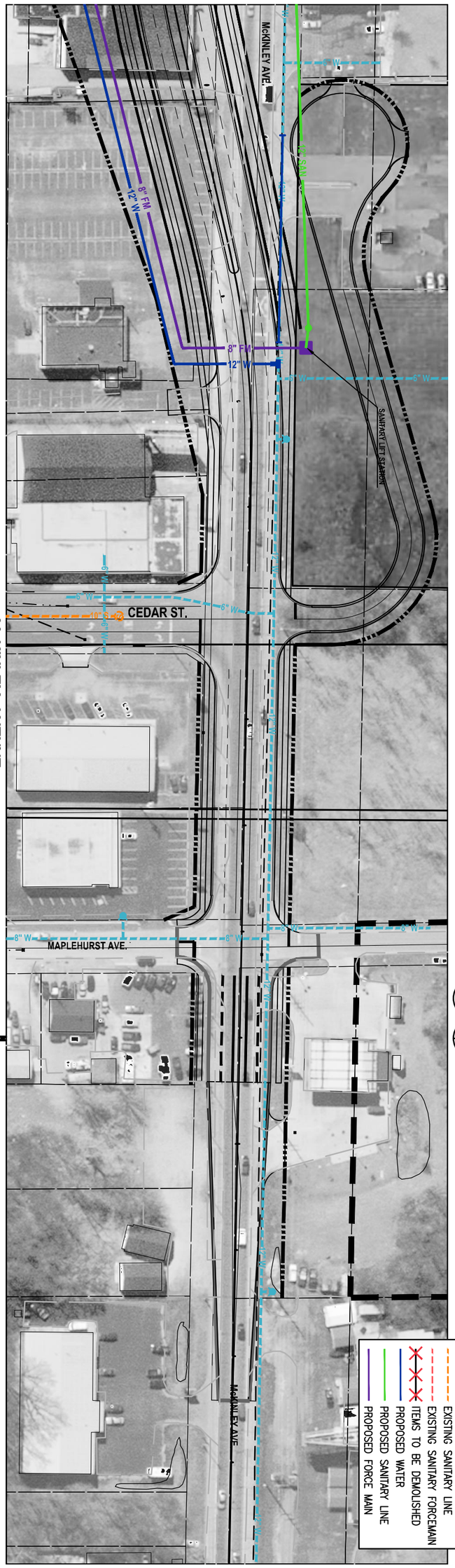
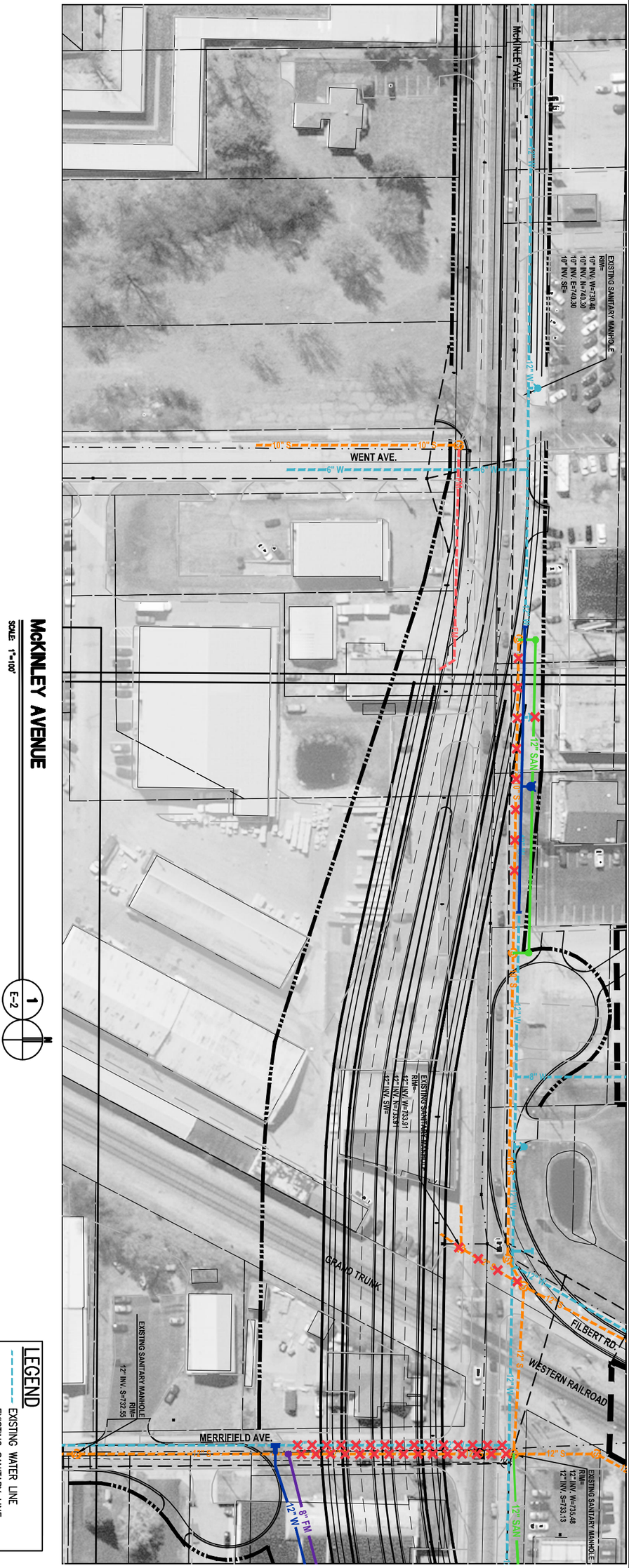


McKINLEY AVENUE
SCALE: 1"=100'

2
E-2



McKINLEY AVENUE
SCALE: 1"=100'

1
E-2

LEGEND

- EXISTING WATER LINE
- EXISTING SANITARY LINE
- EXISTING SANITARY FORCEMAIN
- ITEMS TO BE DEMOLISHED
- PROPOSED WATER
- PROPOSED SANITARY LINE
- PROPOSED FORCE MAIN

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

WATER AND SANITARY RELOCATION
SOUTH UNDERPASS

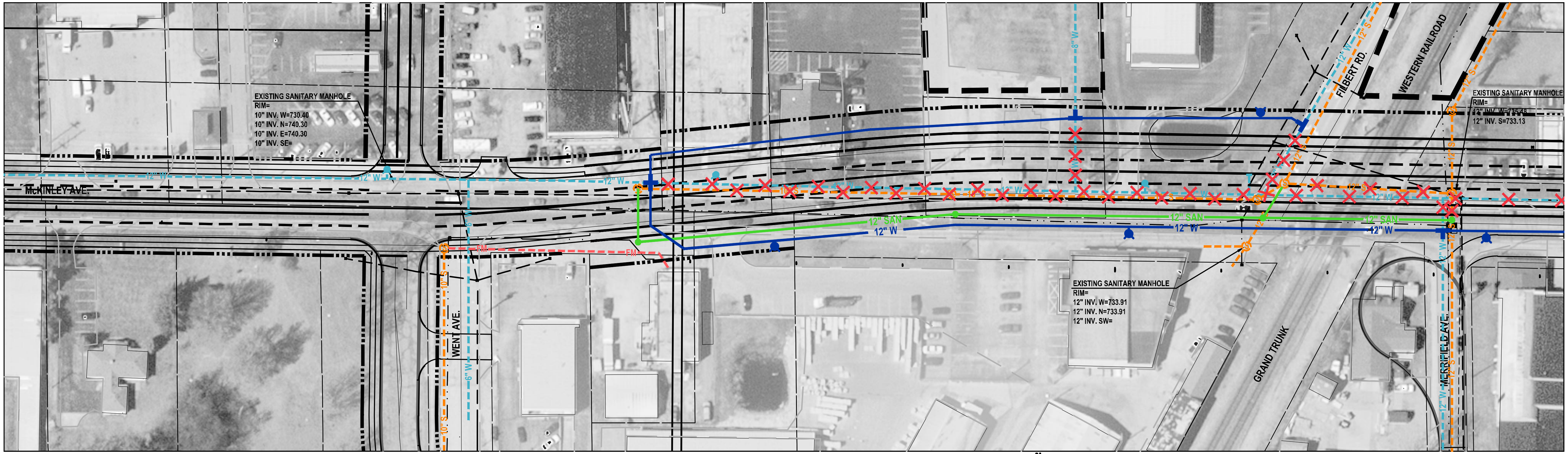
DRAWING NUMBER E-2

DRAWN: JNJ	CHK'D. ACL
DESIGNED: SJM	APPRV'D: ACL
DATE: JUNE 2012	
SCALE:	
CITY PROJECT NUMBER ENT-12-009	
PROJECT NUMBER 1261-2027-90	

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ



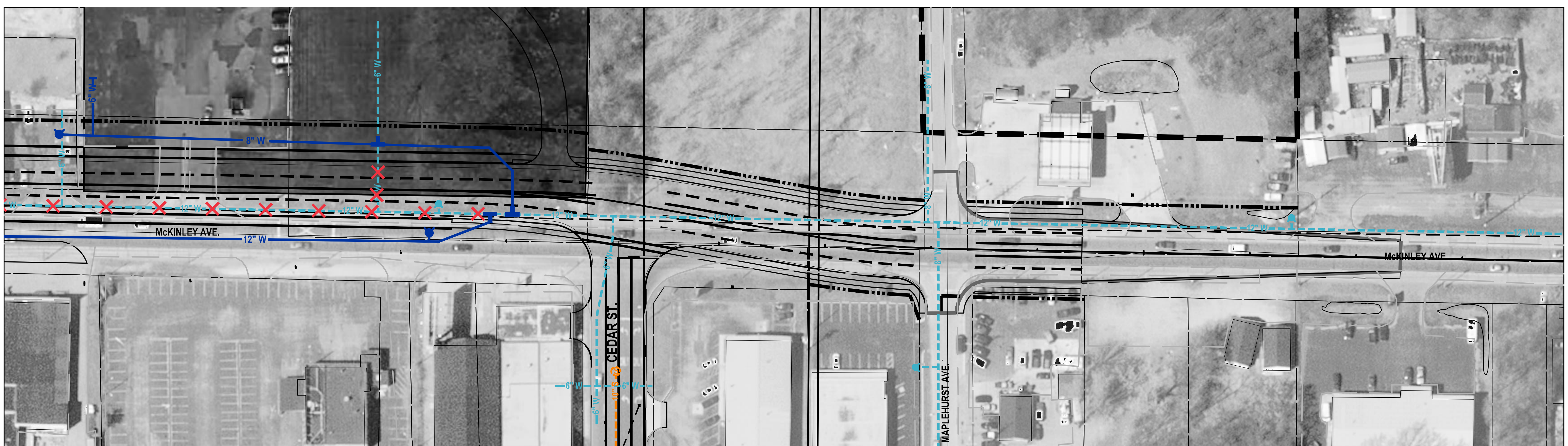
McKINLEY AVENUE

SCALE: 1"=100'

1 E-3

LEGEND

- EXISTING WATER LINE
- EXISTING SANITARY LINE
- EXISTING SANITARY FORCEMAIN
- ITEMS TO BE DEMOLISHED
- PROPOSED WATER
- PROPOSED SANITARY LINE
- PROPOSED FORCE MAIN



McKINLEY AVENUE

SCALE: 1"=100'

2 E-3

DLZ

PRELIMINARY STUDY

DLZ INDIANA, LLC

DRAWN: JNJ | CHK'D.: ACL
DESIGNED: SJM | APPRV'D: ACL
DATE: JUNE 2012
SCALE:
CITY PROJECT NUMBER ENT-12-009
PROJECT NUMBER 1261-2027-90

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

WATER AND SANITARY RELOCATION
NORTH OVERPASS

DRAWING NUMBER
E-3

Date: Jun 01, 2012 2:47pm User ID: jjoy
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Date: Jun 01, 2012, 11:32am User ID: cstumpf
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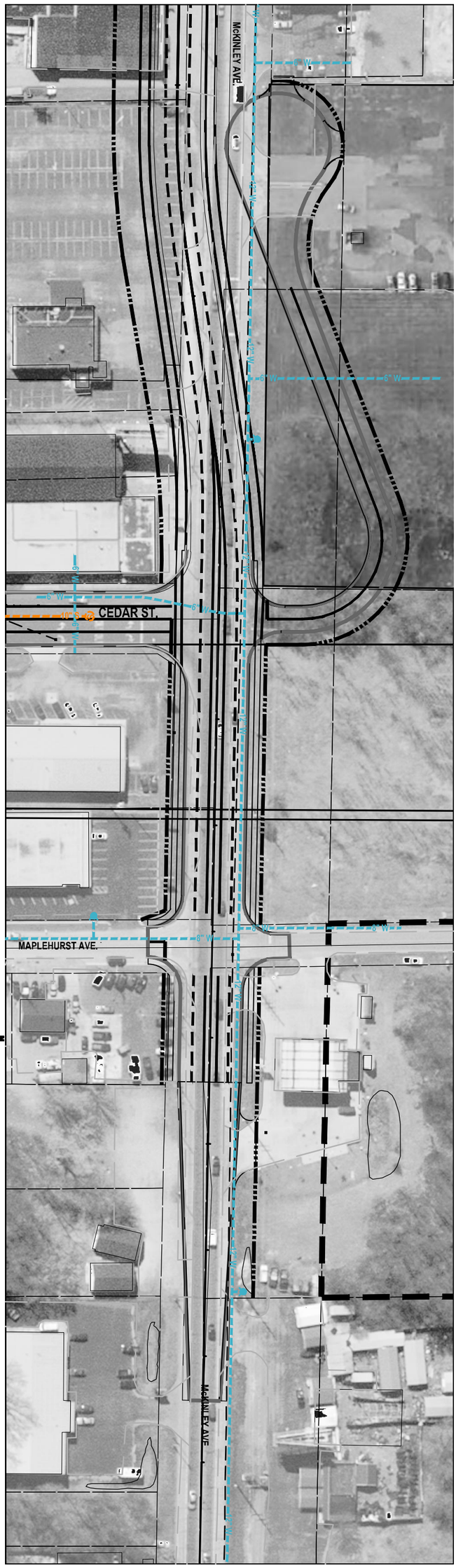
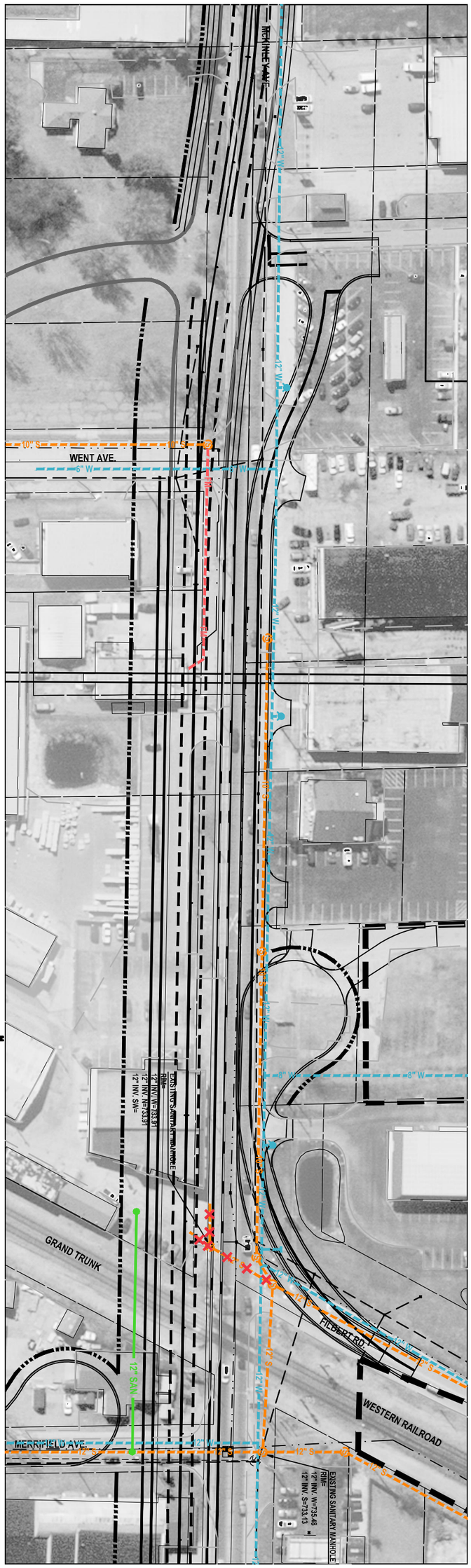




McKINLEY AVENUE
SCALE: 1"=100'
2 E-4

McKINLEY AVENUE
SCALE: 1"=100'
1 E-4

LEGEND

- EXISTING WATER LINE
- EXISTING SANITARY LINE
- EXISTING SANITARY FORCEMAIN
- ITEMS TO BE DEMOLISHED
- PROPOSED WATER
- PROPOSED SANITARY LINE
- PROPOSED FORCE MAIN

DRAWING NUMBER E-4

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

WATER AND SANITARY RELOCATION
SOUTH OVERRPASS

DRAWN:	JNJ	CHK'D.	ACL
DESIGNED:	SJM	APPRV'D:	ACL
DATE:	JUNE 2012		
SCALE:			

CITY PROJECT NUMBER
ENT-12-009

PROJECT NUMBER
1261-2027-90

PRELIMINARY STUDY

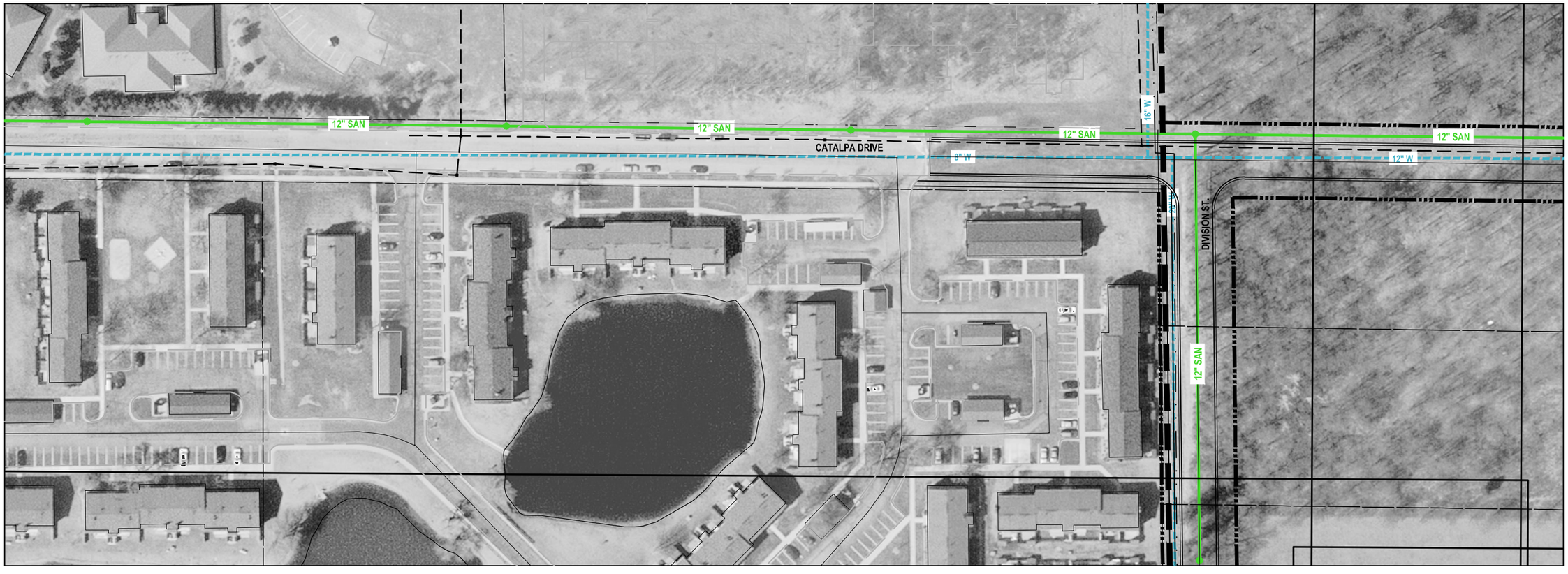
DLZ INDIANA, LLC

DLZ

CATALPA DRIVE

SCALE: 1"=100'

1 / E-5



CATALPA DRIVE

SCALE: 1"=100'

2 / E-5

LEGEND

- EXISTING WATER LINE
- EXISTING SANITARY LINE
- EXISTING SANITARY FORCEMAIN
- ITEMS TO BE DEMOLISHED
- PROPOSED WATER
- PROPOSED SANITARY LINE
- PROPOSED FORCE MAIN

DLZ

PRELIMINARY STUDY

DLZ INDIANA, LLC

DRAWN: JNJ	CHK'D. ACL
DESIGNED: SJM	APPRV'D: ACL
DATE: JUNE 2012	
SCALE:	
CITY PROJECT NUMBER ENT-12-009	
PROJECT NUMBER 1261-2027-90	

MISHAWAKA INDIANA

CITY OF MISHAWAKA

McKINLEY AVENUE GRADE SEPARATION STUDY

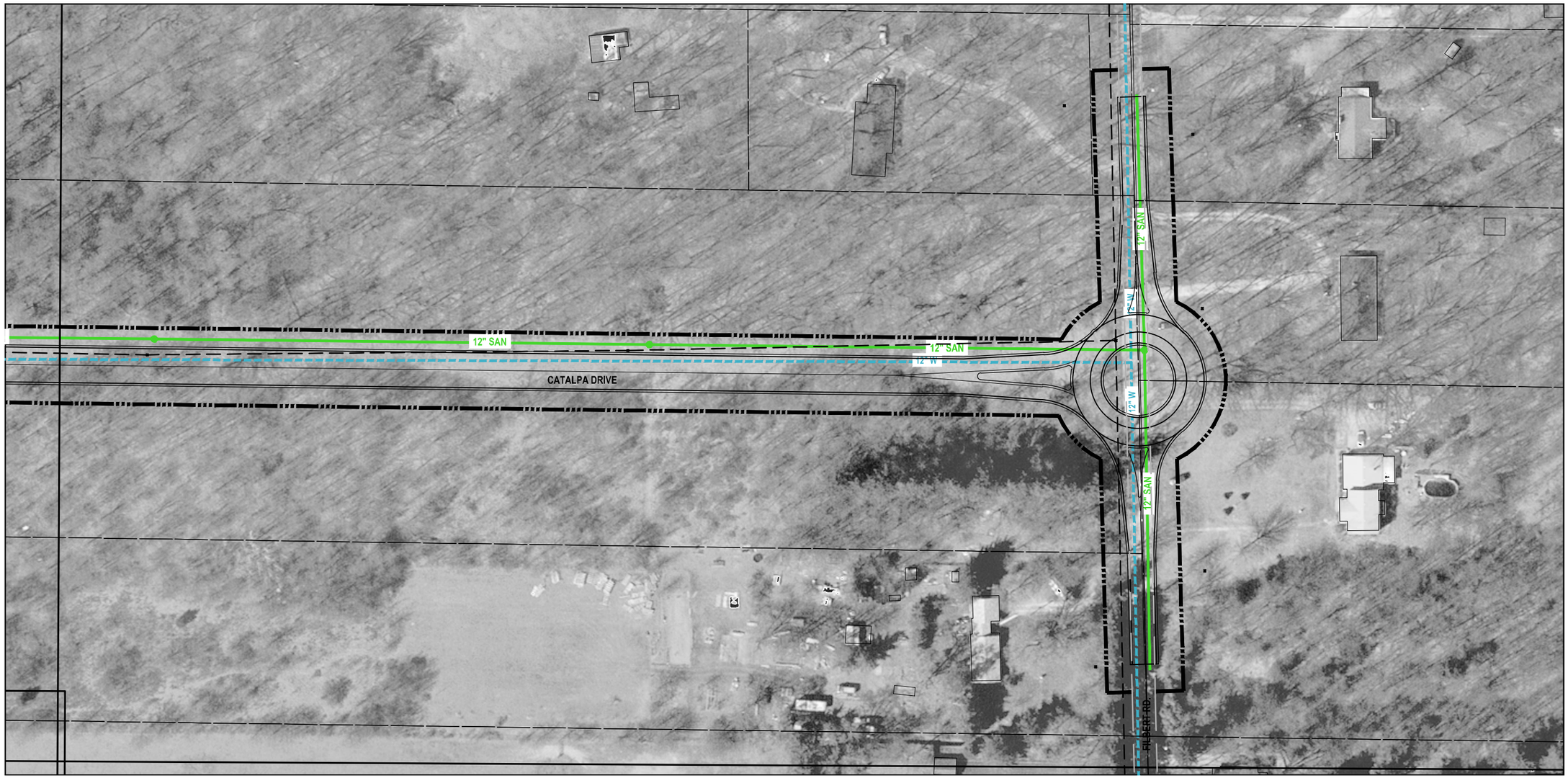
WATER AND SANITARY RELOCATION CATALPA DRIVE

DRAWING NUMBER

E-5

LEGEND

- EXISTING WATER LINE
- EXISTING SANITARY LINE
- EXISTING SANITARY FORCEMAIN
- ITEMS TO BE DEMOLISHED
- PROPOSED WATER
- PROPOSED SANITARY LINE
- PROPOSED FORCE MAIN



CATALPA DRIVE

SCALE: 1"=100'

1 / E-6

N

DLZ

PRELIMINARY STUDY

DLZ INDIANA, LLC

DRAWN: JNJ	CHK'D. ACL
DESIGNED: SJM	APPRV'D: ACL
DATE: JUNE 2012	
SCALE:	
CITY PROJECT NUMBER ENT-12-009	
PROJECT NUMBER 1261-2027-90	

MISHAWAKA INDIANA

CITY OF MISHAWAKA

McKINLEY AVENUE GRADE SEPARATION STUDY

WATER AND SANITARY RELOCATION

CATALPA DRIVE

DRAWING NUMBER

E-6

Date: Jun 01, 2012, 3:48pm User ID: oglenn
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Date: Jun 04, 2012, 10:55am User ID: rcarrington
File: M:\PROJ\1261\2027\Enviro\dwgs\2027E-7&8&9.dwg

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

MASTER PLAN
OVERPASS NORTH

DRAWING NUMBER E-7

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT-12-009
PROJECT NUMBER	1261-2027-90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

Date: Jun 04, 2012, 10:56am User ID: rcarrington
File: M:\PROJ\1261\2027\Enviro\dwgs\2027E-7&8&9.dwg

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

MASTER PLAN
OVERPASS SOUTH

DRAWING NUMBER E-8

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT-12-009
PROJECT NUMBER	1261-2027-90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

Date: Jun 04, 2012, 10:57am User ID: rcarrington
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KDFDMC

Bisx Kli lsr

Dwhrsimf Didbsqhb Á Nudqgd`c

Dwhrsimf Ehadq Nosib

Dwhrsimf R`mhs`qx Rdvdq

Dwhrsimf R`mhs`qx Rdvdq Á @a`mcnmdc

Dwhrs- R`mhs`qx Rdvdq Á Enqbd L`hm

Dwhrsimf Rsnq1 Rdvdq

Dwhrsimf V`sdq

Oqnonrdc R`mhs`qx Rdvdq

Oqnonrdc V`sdq

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

MASTER PLAN
CATALPA AND DIVISION

DRAWING NUMBER E-9

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER ENT-12-009	
PROJECT NUMBER 1261-2027-90	

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

APPENDIX F

Right of Way Impacts

PARCEL	TAX IDENTIFICATION NO.	OWNER	BUSINESS NAME
1	71-09-03-353-009.000-023	PREGEL DENNIS	(VACANT LAND)
2	71-09-03-353-010.000-023	CURRY LAWRENCE R	MCKINLEY MEDICAL CLINIC
3	71-09-03-354-001.000-023	SCHOOL CITY OF MISHAWAKA	LIBERTY ELEMENTARY SCHOOL
4	71-09-03-376-010.000-023	KRONEWITTER JOHN L & ANN M	ACE MAYTAG HOME APPLIANCE CENTER
5	71-09-03-376-011.000-023	J2MD LLC	AA MINI WAREHOUSE
6	71-09-03-376-012.000-023	PD REALTY LLC	PEMBERTON-DAVIS ELECTRIC, INC.
7	71-09-03-376-003.000-031	PD REALTY LLC	
8	71-09-03-376-002.000-031	PD REALTY LLC	
9	71-09-03-376-013.000-023	MCMAHON LLC	RE-STORE, INC.
10	71-09-03-376-004.000-022	MCMAHON LLC	
11	71-09-03-376-014.000-023	WOLFE LARRY & NANCY	BLUE LANTERN RESTAURANT
12	71-09-03-376-015.000-022	WOLFE LARRY & NANCY	
13	71-09-03-376-005.000-022	CAURRO R DOMINIC & MAUREETA M JOINT REVOCABLE TRUST	AAA FURNITURE WAREHOUSE
14	71-09-03-376-016.000-023	CAURRO R DOMINIC & MAUREETA M JOINT REVOCABLE TRUST	THE SOURCE CO.
15	71-09-03-376-006.000-031	CAURRO R DOMINIC & MAUREETA M JOINT REVOCABLE TRUST	
16	71-09-03-376-017.000-022	JOERS GROUP LLC	MULTI-TENANT/PROSOURCE, BATH FITTERS, EXTERIOR DESIGNERS
17	71-09-03-376-008.000-022	JOERS PARTNERSHIP	CROWN FLOORING DISTRIBUTORS
18	71-09-03-376-007.000-022	NORTH CONGREGATION OF JEHOVAHS WITNESSES	KINGDOM HALL OF JEHOVAS WITNESSES
19	71-09-03-451-004.000-031	SOUTH BEND/MISHAWAKA MSA L P	COMMUNICATION TOWER FACILITY
20	71-09-03-452-013.000-023	WELDY LOYD V REVOC TRUST LOYD V WELDY AS TRUSTEE	G&W AUTO SALES
21	71-09-03-452-012.000-022	WELDY LOYD V REVOC TRUST LOYD V WELDY AS TRUSTEE	
22	71-09-03-452-014.000-023	MARTINS SUPER MARKETS	MARTINS BAKERY/TEACHERS CREDIT UNION ATM LOCATION
23	71-09-03-452-011.000-022	MARTINS SUPER MARKETS	
39	71-09-10-101-001.000-023	1ST SOURCE BANK	1ST SOURCE BANK
40	71-09-10-101-002.000-023	SIMERI JOSEPH & MARY	MULTI-TENANT/SUNRISE TANNING, A+WIRELESS UNLIMITED
41	71-09-10-102-001.000-023	SIMERI MARY A	MAZATLAN RESTAURANT
42	71-09-10-102-002.000-023	SIMERI JOSEPH & MARY A	GOLD & DIAMONDS
43	71-09-10-102-006.000-023	SIMERI JOSEPH & MARY A	
44	71-09-10-103-001.000-023	HUSBAND JOHN P	JOHN P. HUSBAND CERTIFIED PUBLIC ACCOUNTANT
45	71-09-10-107-003.000-023	KRUK REAL ESTATE HOLDINGS LLC	MICHIANA AUTO PAINTING AND DETAILING
46	71-09-10-107-001.000-023	EXTRA SPACE PROPERTIES SEVENTY FIVE LLC	EXTRA SPACE SELF STORAGE
47	71-09-10-107-001.000-023	EXTRA SPACE PROPERTIES SEVENTY FIVE LLC	
48	71-09-10-126-001.000-023	BRENNAN JAMES W II & AUDRA E	J.W. BRENNAN AND ASSOCIATES WEALTH MANAGEMENT
49	71-09-10-126-002.000-023	CARULE REX & HELEN G	(VACANT LAND)
50	71-09-10-126-003.000-023	CARULE REX & HELEN G	
51	71-09-10-128-001.000-023	JD INVESTMENT PROPERTIES LLC	AUTO ONE
52	71-09-10-128-002.000-023	BEAN ROBERT A & SHARON L	ACTION CYCLE
53	71-09-10-128-003.000-023	BIG C LUMBER CO INC	BIG C LUMBER
54	71-09-10-128-004.000-023	STROHM CONSTRUCTION CO INC % BIG C LUMBER	
55	71-09-10-128-005.000-023	MCKINLEY LUMBER & HARDWARE CO	
56	71-09-10-128-006.000-023	MCKINLEY LUMBER & HARDWARE CO INC	
57	71-09-10-129-001.000-023	JADET LLC	OLD BOB'S
58	71-09-10-129-002.000-023	KAMM WILLIAM M & IDA E	SKIP'S AUTO DETAILING
59	71-09-10-129-003.000-023	SMITH VERNON T	KNOX TOOL & DIE
60	71-09-10-129-004.000-023	TEE & DEE LLC	T PRODUCTIONS
61	71-09-10-201-001.000-023	DURRELL EDWIN & MARGO	MULTI-TENANT/MCKINLEY PAWN, ED'S CYCLE REPAIR
62	71-09-10-201-002.000-023	DURRELL EDWIN & MARGO	
63	71-09-10-201-003.000-023	COACHMEN AUTO CLUB INC.	COACHMENT AUTO CLUB
64	71-09-10-201-004.000-023	COACHMEN AUTO CLUB INC.	
65	71-09-10-201-007.000-023	1209 MCKINLEY LAND TRUST	MCKINLEY PAWN
66	71-09-10-201-010.000-023	1209 MCKINLEY LAND TRUST	

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DLZ

PRELIMINARY STUDY

DLZ INDIANA, LLC

DRAWN: AMG | CHK'D. RAC
DESIGNED: RAC | APPRV'D: QA
DATE: JUNE 2012
SCALE: 1" = 200'
CITY PROJECT NUMBER ENT-12-009
PROJECT NUMBER 12611-2027-90

MISHAWAKA INDIANA
CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

PROPERTY OWNER IDENTIFICATION

DRAWING NUMBER
F-1

PARCEL	TAX IDENTIFICATION NO.	OWNER	BUSINESS NAME
24	71-09-03-452-015.000-023	MARTINS SUPER MARKETS	MARTINS BAKERY
25	71-09-03-452-010.000-031	MARTINS SUPER MARKETS	
26	71-09-03-452-017.000-023	ROBERTSON SCOTT	(VACANT LAND)
27	71-09-03-452-016.000-022	ROBERTSON SCOTT	
28	71-09-03-452-009.000-022	ROBERTSON SCOTT	
29	71-09-03-452-008.000-022	ROBERTSON SCOTT	
30	71-09-03-452-007.000-022	ROBERTSON SCOTT	
31	71-09-03-452-003.000-031	MISHAWAKA AUTO AUCTION MINOR SUBDIVISION LLC	SOUTH BEND MISHAWAKA AUTO AUCTION
32	71-09-03-476-006.000-023	SWIFTY TRANSPORTATION INC	SWIFTY GAS
33	71-09-03-476-003.000-031	SWIFTY TRANSPORTATION INC	
34	71-09-03-476-001.000-031	MISHAWAKA AUTO AUCTION MINOR SUBDIVISION LLC	SOUTH BEND MISHAWAKA AUTO AUCTION
35	71-09-03-476-007.000-023	STOYANOV STOYAN	CARS2YOU.COM
36	71-09-03-476-004.000-022	STOYANOV STOYAN	
37	71-09-03-476-008.000-023	CHRISTIANSON JOHN N & MARY J	CHRISTIANSON FURNITURE
38	71-09-03-476-005.000-022	CHRISTIANSON JOHN N & MARY J	
65	71-09-10-201-007.000-023	1209 MCKINLEY LAND TRUST	MCKINLEY PAWN
66	71-09-10-201-010.000-023	1209 MCKINLEY LAND TRUST	
67	71-09-10-201-008.000-023	STEWART & HAMILTON PROPERTIES LLC	AMERICAN FREIGHT
68	71-09-10-201-009.000-023	STEWART & HAMILTON PROPERTIES LLC	
69	71-09-10-204-001.000-023	LARA LLC	THE CAR DOCTOR
70	71-09-10-204-002.000-023	BRADLEY CAROLYN, KLUJSZA VICTOR & STEPHEN KLUJSZA	AAA MATTRESS FURNITURE
71	71-09-10-205-001.000-023	CRIDER LARRY G	CRIDER MOTOR CORPORATION
72	71-09-10-205-002.000-023	CRIDER LARRY	
73	71-09-10-205-004.000-023	BRADLEY CAROLYN, KLUJSZA VICTOR & STEPHEN	ARS AUTO SALES
74	71-09-10-205-005.000-023	BRADLEY CAROLYN, KLUJSZA VICTOR & STEPHEN	
75	71-09-10-226-001.000-023	THOMPSON MICHAEL H	THOMPSON AUTO DIAGNOSTIC
76	71-09-10-226-002.000-023	BRADLEY CAROLYN & KLUJSZA VICTOR & STEPHEN	(VACANT LAND)
77	71-09-10-226-003.000-023	FLOWERS MICHAEL A & PAULINE E	P&M SHEDS AND DECKS

DLZ

PRELIMINARY STUDY

DLZ INDIANA, LLC

DRAWN: AMG | CHK'D. RAC
DESIGNED: RAC | APPRV'D: QA
DATE: JUNE 2012
SCALE: 1" = 200'
CITY PROJECT NUMBER ENT-12-009
PROJECT NUMBER 1261-2027-90

MISHAWAKA
CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY
INDIANA

PROPERTY OWNER IDENTIFICATION

DRAWING NUMBER
F- 2

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Date: Jun 28, 2012, 3:53pm User ID: rcarrington
File: M:\PROJ\1261\2027\RW\Graphics\RW Land Use.dwg

PARCEL	TAX IDENTIFICATION NO.	OWNER
78	71-08-03-151-004.000-022	MISHAWAKA UTILITIES
79	71-08-03-151-003.000-022	VILLAGE APARTMENTS
80	71-08-03-102-019.000-022	STONEBRIDGE MISHAWAKA LLC
81	71-08-03-176-006.000-031	LUDWIG HARVEY CARL IRREVOCABLE TRUST THE
82	71-08-03-176-005.000-031	CONERY SHAWN & MOONS MICHAEL & CONERY GREGORY & OLIVA ANGELO D
83	71-08-03-176-004.000-031	ANDERSON JAMES E & DIXIE L
84	71-08-03-176-003.000-031	ANDERSON JAMES E & DIXIE L
85	71-08-03-176-002.000-031	PLATZ DAVID JR & HELGA M
86	71-08-03-176-001.000-031	CRESSY LAND INVESTMENTS LLC
87	71-08-03-126-008.000-031	SZUCS JAMES A & MARJORIE F
88	71-08-03-251-005.000-031	KOLBER ROBERT
89	71-08-03-203-009.000-031	VEIYATHU MALLY TERESA
90	71-08-03-203-008.000-031	KALLOOKU LANGARA MATHEW M & ROSE

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

PROPERTY OWNER IDENTIFICATION

DRAWING NUMBER F-3

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER ENT-12-009	
PROJECT NUMBER 1261-2027-90	

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

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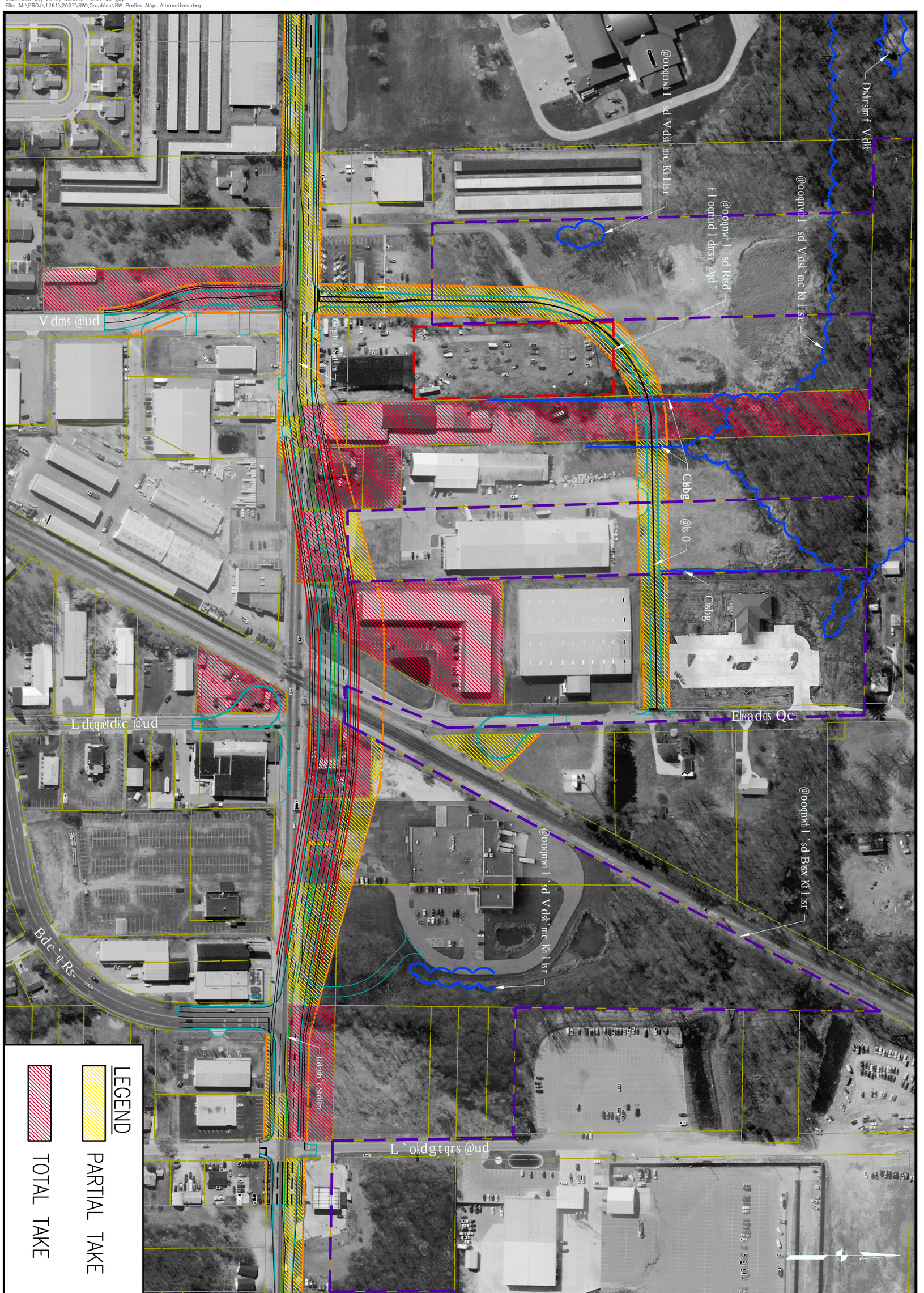

LEGEND

PARTIAL TAKE

TOTAL TAKE

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

UNDERPASS
NORTH SHIFT – FILBERT ALTERNATIVE 1

DRAWING NUMBER F – 4

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER ENT–12–009	
PROJECT NUMBER 1261–2027–90	

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

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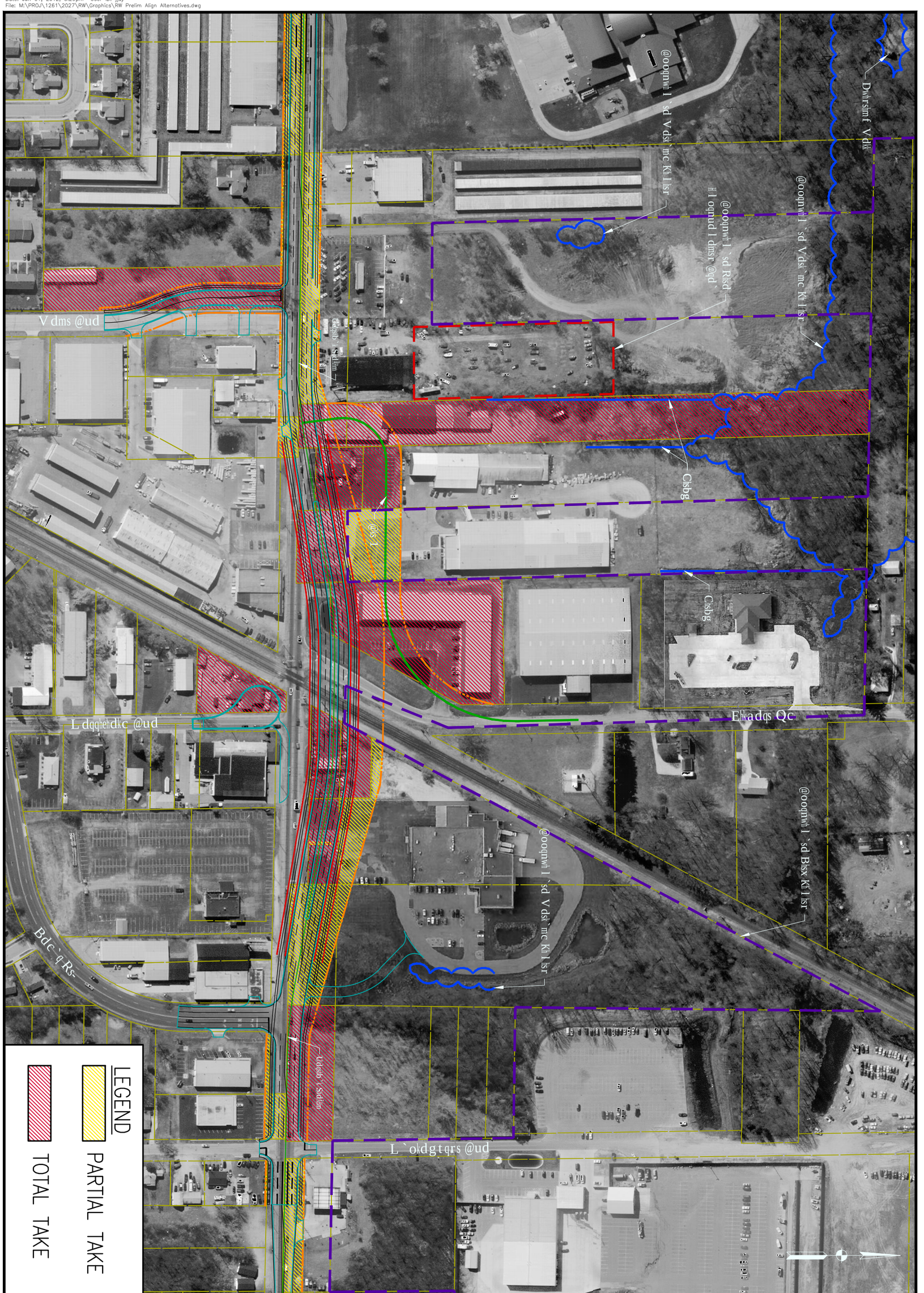

LEGEND

PARTIAL TAKE

TOTAL TAKE

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

UNDERPASS
NORTH SHIFT – FILBERT ALTERNATIVE 2

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT–12–009
PROJECT NUMBER	1261–2027–90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

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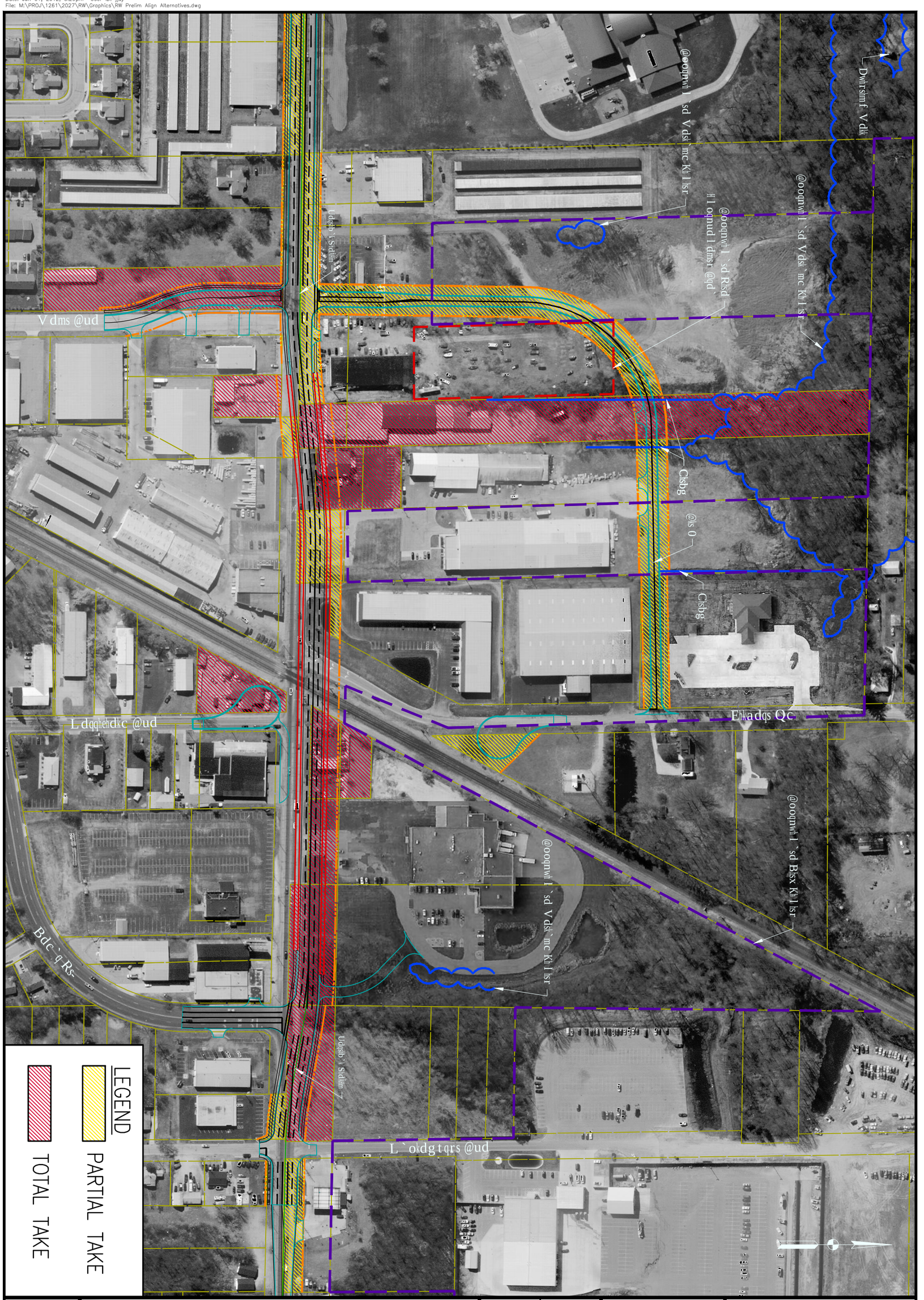

LEGEND

PARTIAL TAKE

TOTAL TAKE

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

OVERPASS
NORTH SHIFT – FILBERT ALTERNATIVE 1

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT–12–009
PROJECT NUMBER	1261–2027–90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

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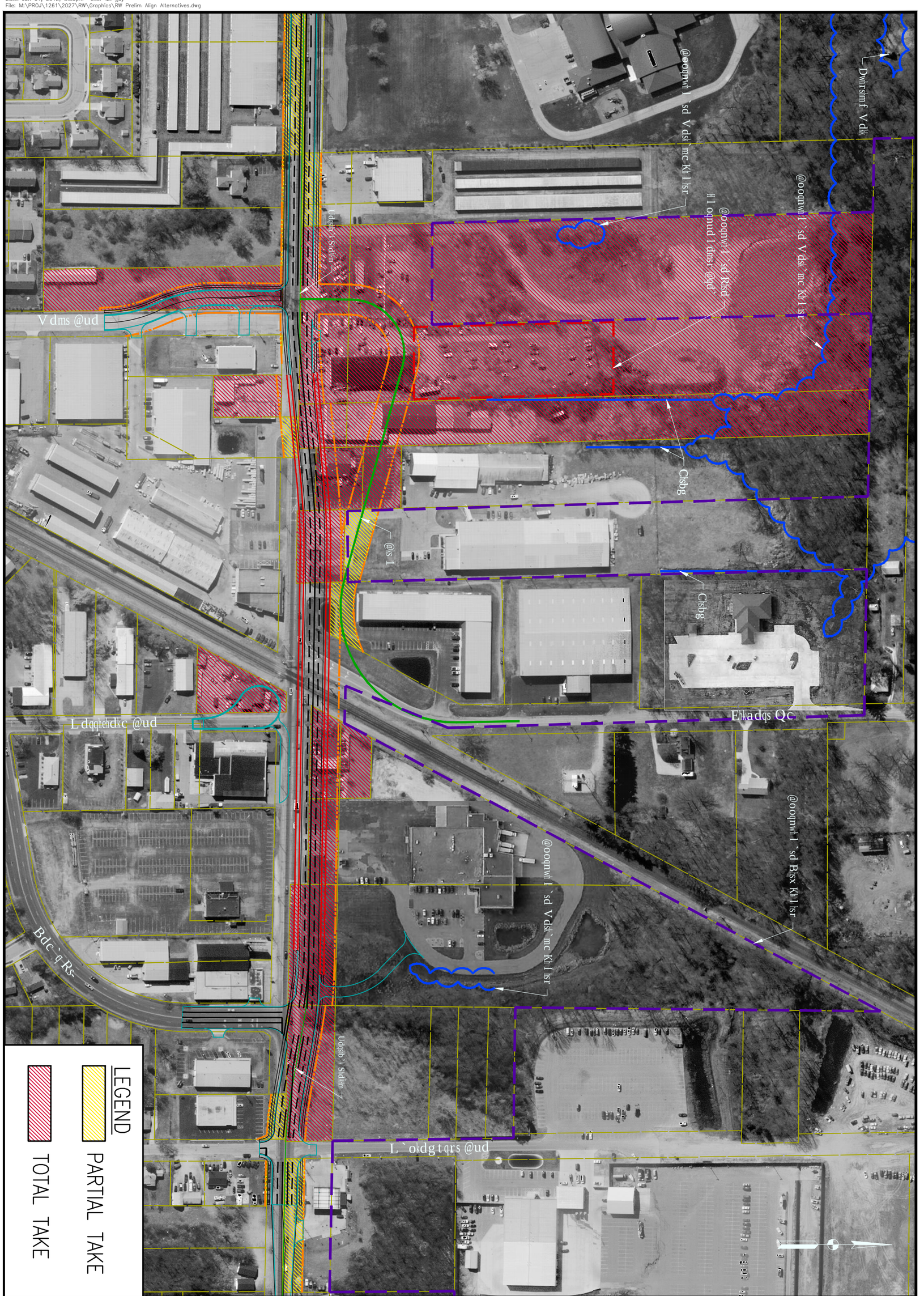

LEGEND

PARTIAL TAKE

TOTAL TAKE

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

OVERPASS
NORTH SHIFT – FILBERT ALTERNATIVE 2

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT–12–009
PROJECT NUMBER	1261–2027–90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

DRAWING NUMBER F – 7

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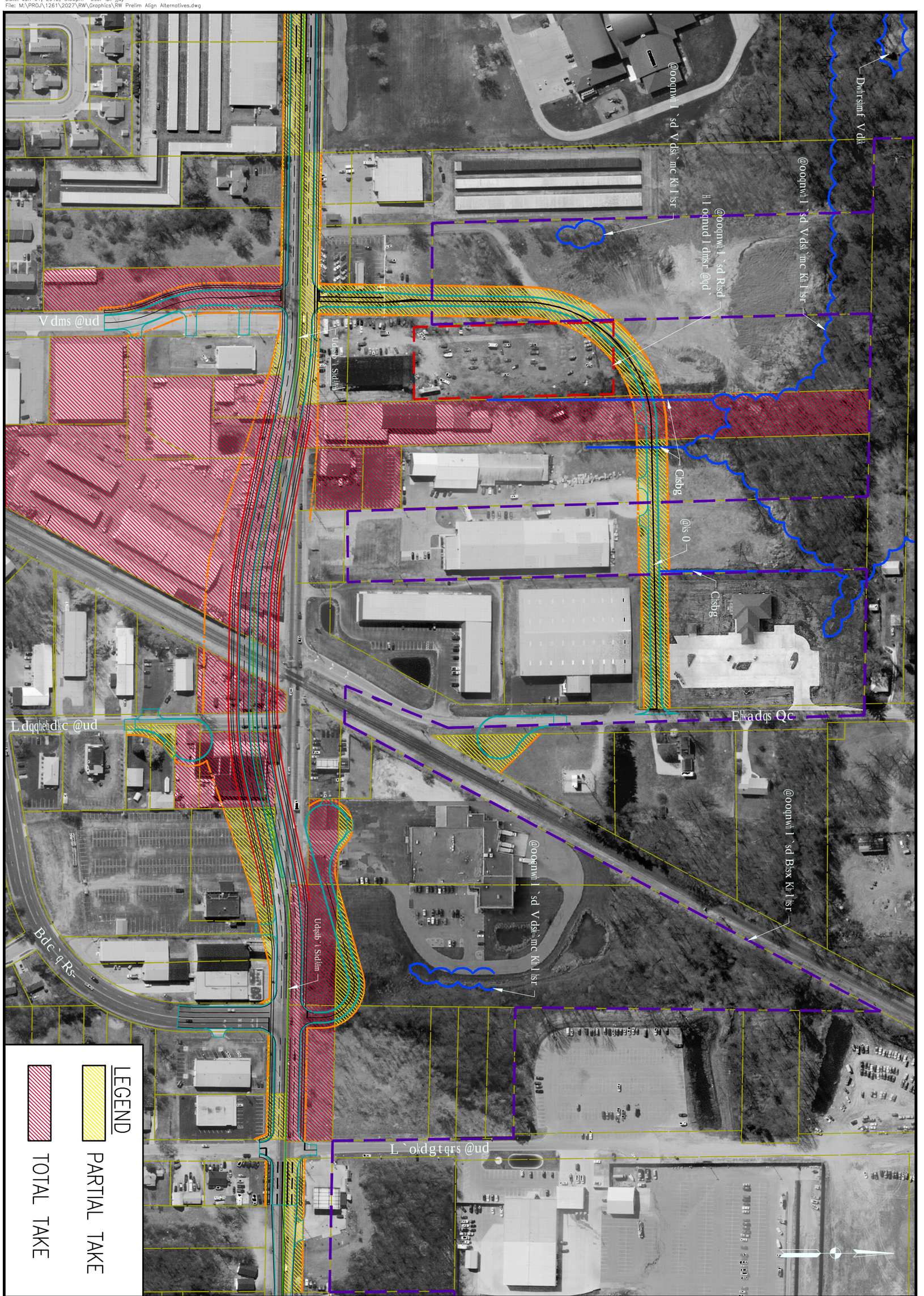

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

UNDERPASS
SOUTH SHIFT – FILBERT ALTERNATIVE 1

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT–12–009
PROJECT NUMBER	1261–2027–90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DRAWING NUMBER F – 8

DLZ

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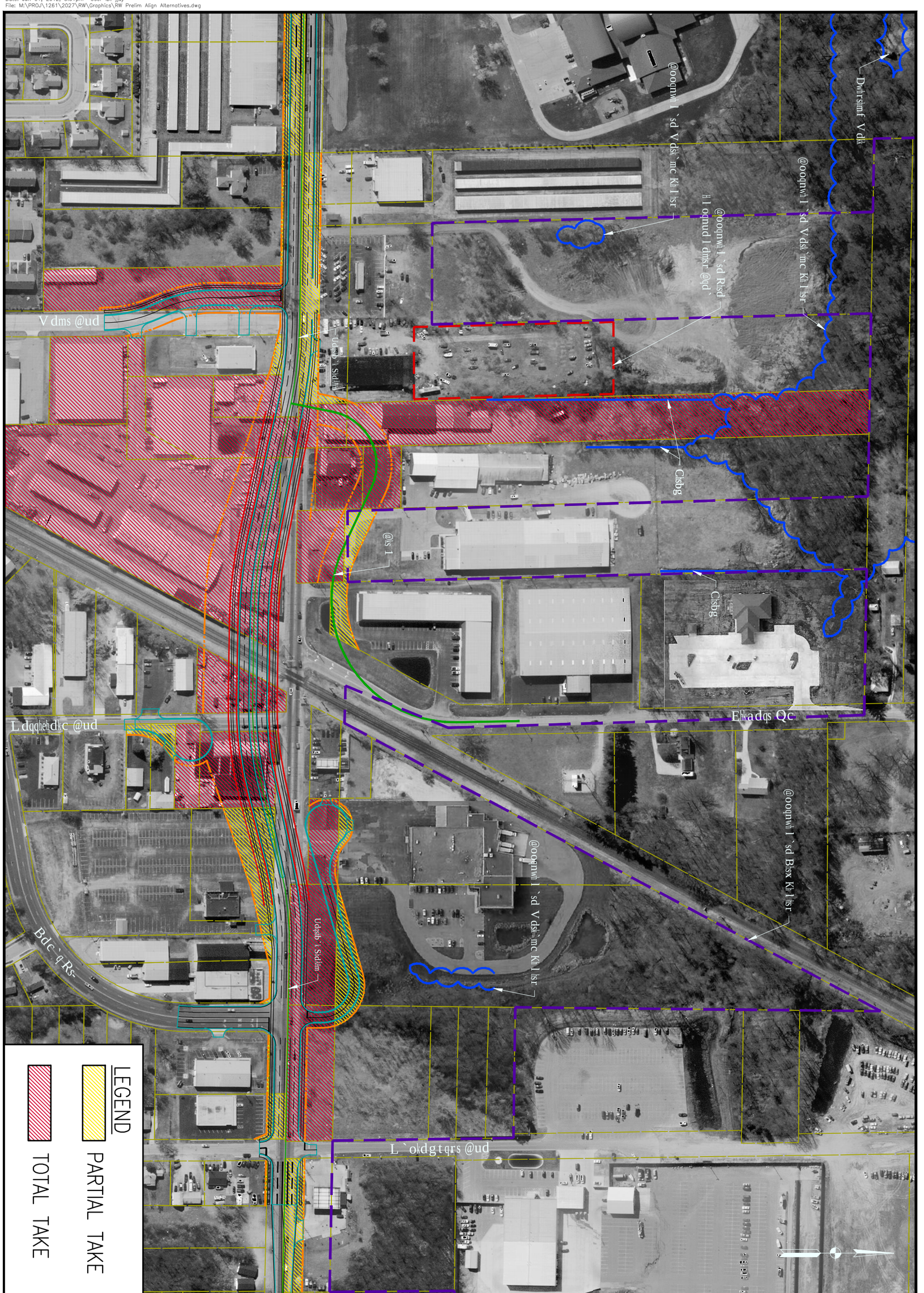

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

UNDERPASS
SOUTH SHIFT – FILBERT ALTERNATIVE 2

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT–12–009
PROJECT NUMBER	1261–2027–90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DRAWING NUMBER F – 9

DLZ

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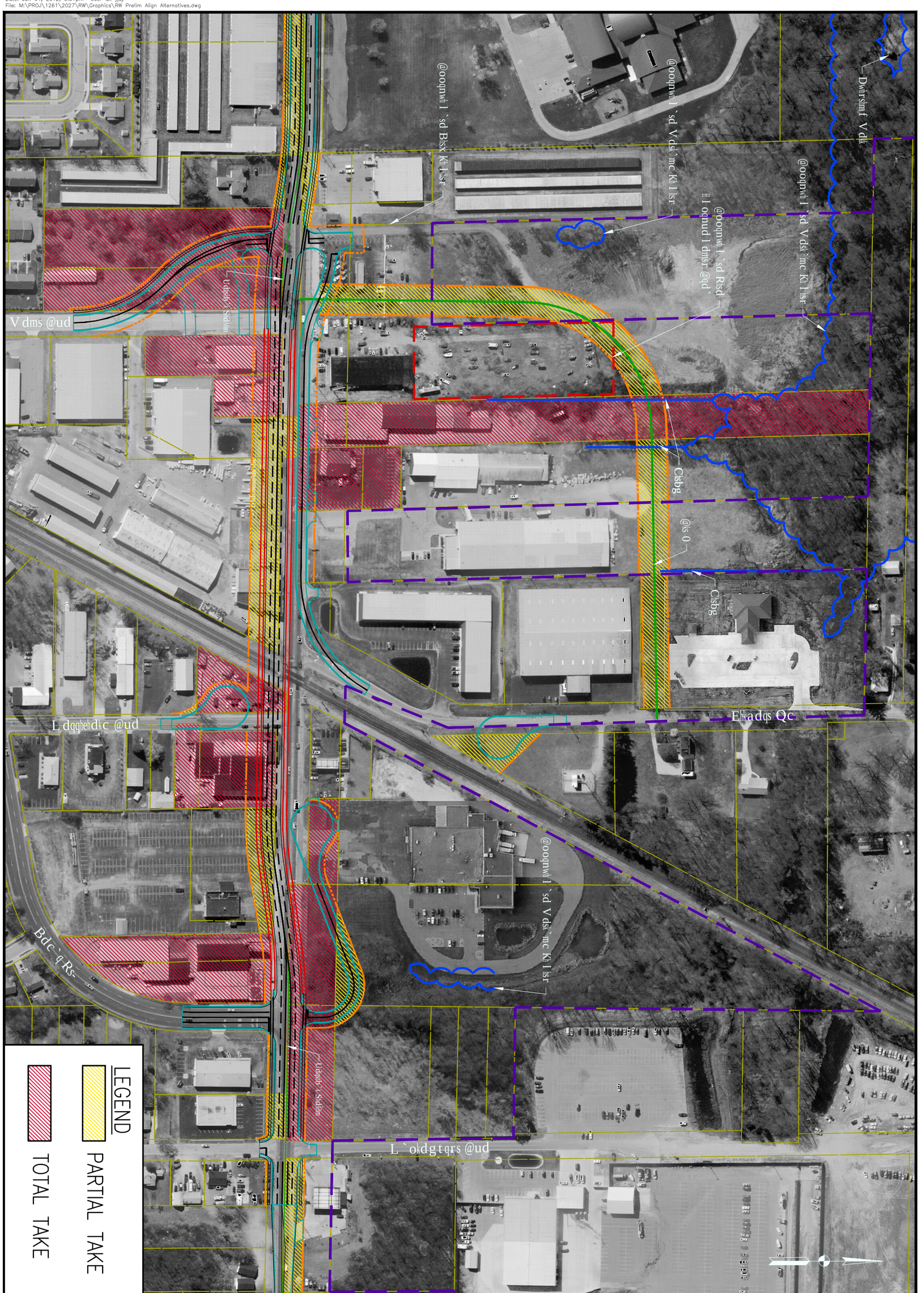

LEGEND

PARTIAL TAKE

TOTAL TAKE

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

OVERPASS
SOUTH SHIFT – FILBERT ALTERNATIVE 1

DRAWING NUMBER F–10

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT–12–009
PROJECT NUMBER	1261–2027–90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

Date: Jun 01, 2012, 3:32pm User ID: jjay
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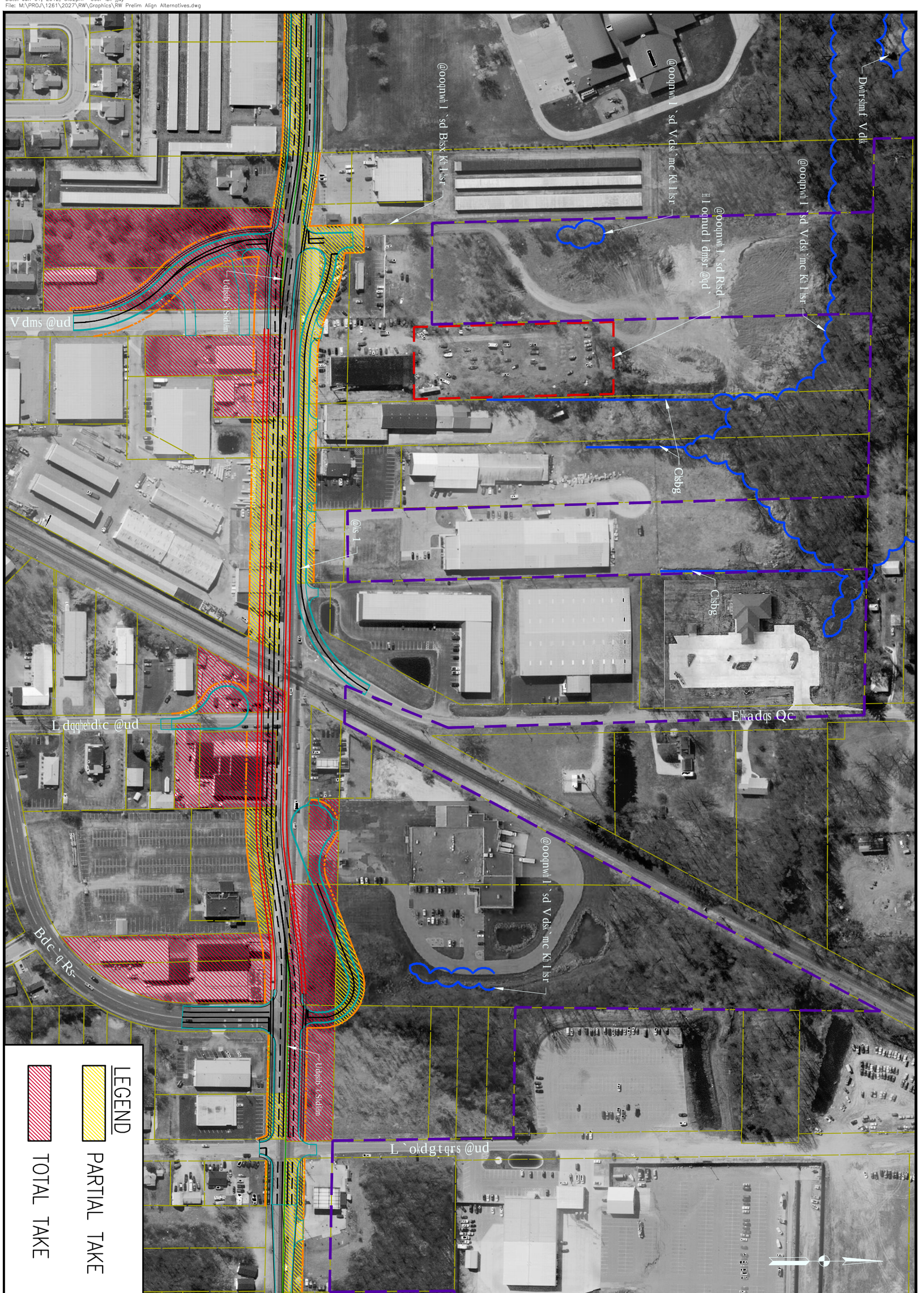

LEGEND

PARTIAL TAKE

TOTAL TAKE

MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

OVERPASS
SOUTH SHIFT – FILBERT ALTERNATIVE 2

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT–12–009
PROJECT NUMBER	1261–2027–90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

DRAWING NUMBER F–11

Date: Jun 01, 2012, 3:32pm User ID: jjay
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MISHAWAKA INDIANA

CITY OF MISHAWAKA
McKINLEY AVENUE GRADE SEPARATION STUDY

CATALPA AND DIVISION

DRAWN: AMG	CHK'D. RAC
DESIGNED: RAC	APPRV'D: QA
DATE: JUNE 2012	
SCALE: 1" = 200'	
CITY PROJECT NUMBER	ENT-12-009
PROJECT NUMBER	1261-2027-90

PRELIMINARY STUDY

DLZ INDIANA, LLC

DLZ

DRAWING NUMBER F-12

APPENDIX G

Cost Breakdown

McKINLEY GRADE SEPERATION

STATEMENT OF PROBABLE CONSTRUCTION COST ESTIMATE

CATALPA DRIVE AND DIVISION STREET EXTENSION

June 28, 2012

No.	Description	Quantity	Unit	Current Unit Price	Amount
1	CONSTRUCTION ENGINEERING (3%)	1	LS	$ 84,113.00	$ 84,113.00
2	MOBILIZATION AND DEMOBILIZATION (5%)	1	LS	$ 140,188.00	$ 140,188.00
3	CLEARING OF RIGHT OF WAY (5%)	1	LS	$ 140,188.00	$ 140,188.00
4	MAINTAINING TRAFFIC (5%)	1	LS	$ 140,188.00	$ 140,188.00
5	HMA PAVEMENT	12,690	SYS	$ 36.00	$ 456,840.00
6	SUBBASE FOR PCCP	0	CYS	$ 35.00	$ -
7	PCCP, 8 IN.	100	SYS	$ 65.00	$ 6,500.00
8	SUBGRADE TREATMENT, TYPE IIIA	12,790	SYS	$ 12.00	$ 153,480.00
9	CURB AND GUTTER	7,359	LFT	$ 16.00	$ 117,744.00
10	CONCRETE, SIDEWALK, 4 IN.	1,055	SYS	$ 35.00	$ 36,925.00
11	EXCAVATION, COMMON	7,201	CYS	$ 15.00	$ 108,012.96
12	CENTER CURB	193	SYS	$ 75.00	$ 14,475.00
13	PAVERS, BRICK	273	SYS	$ 75.00	$ 20,475.00
14	INTEGRAL CURB	490	LFT	$ 12.00	$ 5,880.00
15	12" PIPE	720	LFT	$ 24.00	$ 17,280.00
16	36" PIPE	3,548	LFT	$ 72.00	$ 255,456.00
17	STRUCTURE BACKFILL	9,796	CYS	$ 40.00	$ 391,840.00
18	INLET	18	EACH	$ 2,000.00	$ 36,000.00
19	MANHOLE	18	EACH	$ 5,000.00	$ 90,000.00
20	LIGHTING	1	LS	$ 20,000.00	$ 20,000.00
21	LANDSCAPING	1	LS	$ 5,000.00	$ 5,000.00
22	EROSION CONTROL	1	LS	$ 2,500.00	$ 2,500.00
23	PAVEMENT MARKING AND SIGNING	1	LS	$ 5,000.00	$ 5,000.00
24	PIPE, TYPE 4 CIRCULAR 6 IN	7,096	LFT	$ 12.00	$ 85,152.00
25	AGGREGATE FOR UNDERDRAINS	1,051	CYS	$ 5.00	$ 5,256.30
26	GEOTEXTILES FOR UNDERDRAIN	7,096	SYS	$ 2.00	$ 14,192.00
27	SANITARY AND WATER IMPROVEMENTS	1	LS	$ 395,000.00	$ 395,000.00
28	MISCELLANEOUS ITEMS (25%)	1	LS	$ 560,752.00	$ 560,752.00
				2012 TOTAL	**$ 3,308,437.26**
				NUMBER OF YEARS INFLATED	2
				INFLATION RATE	5%
				INFLATION AMOUNT	$ 339,200.00
				2014 TOTAL WITH FILBERT ALT. NO. 2	**$ 3,650,000.00**

M:\PROJ\1261\2027\Civil\Eng\Cost Estimate\[Cost Estimate.xls]Summary

McKINLEY GRADE SEPERATION

STATEMENT OF PROBABLE CONSTRUCTION COST ESTIMATE

UNDERPASS, NORTH OPTION WITH FILBERT ALT. NO. 1

June 28, 2012

No.	Description	Quantity	Unit	Current Unit Price	Amount
1	CONSTRUCTION ENGINEERING (3%)	1	LS	$ 268,264.00	$ 268,264.00
2	MOBILIZATION AND DEMOBILIZATION (5%)	1	LS	$ 447,107.00	$ 447,107.00
3	CLEARING OF RIGHT OF WAY (5%)	1	LS	$ 447,107.00	$ 447,107.00
4	MAINTAINING TRAFFIC (5%)	1	LS	$ 1,647,107.00	$ 1,647,107.00
5	PCCP, 11 IN.	24,528	SYS	$ 50.00	$ 1,226,400.00
6	SUBBASE FOR PCCP	6,938	CYS	$ 35.00	$ 242,830.00
7	SUBGRADE TREATMENT, TYPE IA	17,907	SYS	$ 10.00	$ 179,066.67
8	INTEGRAL CURB	6,715	LFT	$ 12.00	$ 80,580.00
9	CONCRETE, SIDEWALK, 4 IN.	3,996	SYS	$ 35.00	$ 139,860.00
10	EXCAVATION, COMMON	83,888	CYS	$ 15.00	$ 1,258,320.00
11	12" PIPE	1,182	LFT	$ 24.00	$ 28,368.00
12	48" PIPE	3,595	LFT	$ 96.00	$ 345,120.00
13	STRUCTURE BACKFILL	10,062	CYS	$ 40.00	$ 402,480.00
14	INLET	18	EACH	$ 2,000.00	$ 36,000.00
15	MANHOLE	18	EACH	$ 5,000.00	$ 90,000.00
16	LIGHTING	1	LS	$ 100,000.00	$ 100,000.00
17	LANDSCAPING	1	LS	$ 300,000.00	$ 300,000.00
18	EROSION CONTROL	1	LS	$ 20,000.00	$ 20,000.00
19	PAVEMENT MARKING AND SIGNING	1	LS	$ 20,000.00	$ 20,000.00
20	PIPE, TYPE 4 CIRCULAR 6 IN	17,975	LFT	$ 12.00	$ 215,700.00
21	AGGREGATE FOR UNDERDRAINS	2,663	CYS	$ 5.00	$ 13,314.81
22	GEOTEXTILES FOR UNDERDRAIN	17,975	SYS	$ 2.00	$ 35,950.00
23	DEWATERING	1	LS	$ 200,000.00	$ 200,000.00
24	SANITARY SEWER AND WATER RELOCATIONS	1	LS	$ 1,103,000.00	$ 1,103,000.00
25	FILBERT ROAD ALTERNATE NO. 1	1	LS	$ 636,292.00	$ 636,292.00
26	WENT AVENUE SOUTH	1	LS	$ 139,607.00	$ 139,607.00
27	NORTH CUL-DE-SAC	1	LS	$ 72,999.00	$ 72,999.00
28	SOUTH CUL-DE-SAC	1	LS	$ 106,636.00	$ 106,636.00
29	CEDAR STREET APPROACH	1	LS	$ 91,562.00	$ 91,562.00
30	MARTIN'S ENTRANCE DRIVE	1	LS	$ 69,628.00	$ 69,628.00
31	MISCELLANEOUS ITEMS (25%)	1	LS	$ 1,788,428.00	$ 1,788,428.00
				2012 TOTAL	**$ 11,751,726.48**
				UNDERPASS BRIDGE COST	$ 10,042,000.00
				TEMPORARY RAILROAD RUNAROUND	$ 750,000.00
				STORMSEWER TRUNKLINE TO RIVER	$ 13,300,000.00
				FIBER OPTIC RELOCATION	$ 1,200,000.00
				NUMBER OF YEARS INFLATED	2
				INFLATION RATE	5%
				INFLATION AMOUNT	$ 3,797,000.00
				2014 TOTAL WITH FILBERT ALT. NO. 1	**$ 40,850,000.00**

McKINLEY GRADE SEPERATION

STATEMENT OF PROBABLE CONSTRUCTION COST ESTIMATE

UNDERPASS, NORTH OPTION WITH FILBERT ALT. NO. 2

June 28, 2012

No.	Description	Quantity	Unit	Current Unit Price	Amount
1	CONSTRUCTION ENGINEERING (3%)	1	LS	$ 258,447.00	$ 258,447.00
2	MOBILIZATION AND DEMOBILIZATION (5%)	1	LS	$ 430,745.00	$ 430,745.00
3	CLEARING OF RIGHT OF WAY (5%)	1	LS	$ 430,745.00	$ 430,745.00
4	MAINTAINING TRAFFIC (5%)	1	LS	$ 1,630,745.00	$ 1,630,745.00
5	PCCP, 11 IN.	24,528	SYS	$ 50.00	$ 1,226,400.00
6	SUBBASE FOR PCCP	6,938	CYS	$ 35.00	$ 242,830.00
7	SUBGRADE TREATMENT, TYPE IA	17,907	SYS	$ 10.00	$ 179,066.67
8	INTEGRAL CURB	6,715	LFT	$ 12.00	$ 80,580.00
9	CONCRETE, SIDEWALK, 4 IN.	3,996	SYS	$ 35.00	$ 139,860.00
10	EXCAVATION, COMMON	83,888	CYS	$ 15.00	$ 1,258,320.00
11	12" PIPE	1,182	LFT	$ 24.00	$ 28,368.00
12	48" PIPE	3,595	LFT	$ 96.00	$ 345,120.00
13	STRUCTURE BACKFILL	10,062	CYS	$ 40.00	$ 402,480.00
14	INLET	18	EACH	$ 2,000.00	$ 36,000.00
15	MANHOLE	18	EACH	$ 5,000.00	$ 90,000.00
16	LIGHTING	1	LS	$ 100,000.00	$ 100,000.00
17	LANDSCAPING	1	LS	$ 300,000.00	$ 300,000.00
18	EROSION CONTROL	1	LS	$ 20,000.00	$ 20,000.00
19	PAVEMENT MARKING AND SIGNING	1	LS	$ 20,000.00	$ 20,000.00
20	PIPE, TYPE 4 CIRCULAR 6 IN	17,975	LFT	$ 12.00	$ 215,700.00
21	AGGREGATE FOR UNDERDRAINS	2,663	CYS	$ 5.00	$ 13,314.81
22	GEOTEXTILES FOR UNDERDRAIN	17,975	SYS	$ 2.00	$ 35,950.00
23	DEWATERING	1	LS	$ 200,000.00	$ 200,000.00
24	SANITARY SEWER AND WATER RELOCATIONS	1	LS	$ 1,103,000.00	$ 1,103,000.00
25	FILBERT ROAD ALTERNATE NO. 2	1	LS	$ 455,972.00	$ 455,972.00
26	WENT AVENUE SOUTH	1	LS	$ 131,137.00	$ 131,137.00
27	SOUTH CUL-DE-SAC	1	LS	$ 106,636.00	$ 106,636.00
28	CEDAR STREET APPROACH	1	LS	$ 91,562.00	$ 91,562.00
29	MARTIN'S ENTRANCE DRIVE	1	LS	$ 69,628.00	$ 69,628.00
30	MISCELLANEOUS ITEMS (25%)	1	LS	$ 1,722,981.00	$ 1,722,981.00
				2012 TOTAL	**$ 11,365,587.48**
				UNDERPASS BRIDGE COST	$ 10,042,000.00
				TEMPORARY RAILROAD RUNAROUND	$ 750,000.00
				STORMSEWER TRUNKLINE TO RIVER	$ 13,300,000.00
				FIBER OPTIC RELOCATION	$ 1,200,000.00
				NUMBER OF YEARS INFLATED	2
				INFLATION RATE	5%
				INFLATION AMOUNT	$ 3,757,500.00
				2014 TOTAL WITH FILBERT ALT. NO. 2	**$ 40,420,000.00**

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McKINLEY GRADE SEPERATION

STATEMENT OF PROBABLE CONSTRUCTION COST ESTIMATE

UNDERPASS, SOUTH OPTION WITH FILBERT ALT. NO. 1

June 28, 2012

No.	Description	Quantity	Unit	Current Unit Price	Amount
1	CONSTRUCTION ENGINEERING (3%)	1	LS	$ 258,422.00	$ 258,422.00
2	MOBILIZATION AND DEMOBILIZATION (5%)	1	LS	$ 430,703.00	$ 430,703.00
3	CLEARING OF RIGHT OF WAY (5%)	1	LS	$ 430,703.00	$ 430,703.00
4	MAINTAINING TRAFFIC (5%)	1	LS	$ 1,630,703.00	$ 1,630,703.00
5	PCCP, 11 IN.	24,517	SYS	$ 50.00	$ 1,225,850.00
6	SUBBASE FOR PCCP	6,917	CYS	$ 35.00	$ 242,095.00
7	SUBGRADE TREATMENT, TYPE IA	18,496	SYS	$ 10.00	$ 184,960.00
8	INTEGRAL CURB	6,867	LFT	$ 12.00	$ 82,404.00
9	CONCRETE, SIDEWALK, 4 IN.	3,998	SYS	$ 35.00	$ 139,930.00
10	EXCAVATION, COMMON	83,625	CYS	$ 15.00	$ 1,254,375.00
11	12" PIPE	1,182	LFT	$ 24.00	$ 28,368.00
12	48" PIPE	3,598	LFT	$ 96.00	$ 345,408.00
13	STRUCTURE BACKFILL	10,070	CYS	$ 40.00	$ 402,800.00
14	INLET	18	EACH	$ 2,000.00	$ 36,000.00
15	MANHOLE	18	EACH	$ 5,000.00	$ 90,000.00
16	LIGHTING	1	LS	$ 100,000.00	$ 100,000.00
17	LANDSCAPING	1	LS	$ 300,000.00	$ 300,000.00
18	EROSION CONTROL	1	LS	$ 20,000.00	$ 20,000.00
19	PAVEMENT MARKING AND SIGNING	1	LS	$ 20,000.00	$ 20,000.00
20	PIPE, TYPE 4 CIRCULAR 6 IN	17,990	LFT	$ 12.00	$ 215,880.00
21	AGGREGATE FOR UNDERDRAINS	2,665	CYS	$ 5.00	$ 13,325.93
22	GEOTEXTILES FOR UNDERDRAIN	17,990	SYS	$ 2.00	$ 35,980.00
23	DEWATERING	1	LS	$ 200,000.00	$ 200,000.00
24	SANITARY SEWER AND WATER RELOCATIONS	1	LS	$ 678,000.00	$ 678,000.00
25	FILBERT ROAD ALTERNATE NO. 1	1	LS	$ 636,292.00	$ 636,292.00
26	WENT AVENUE SOUTH	1	LS	$ 139,607.00	$ 139,607.00
27	NORTH CUL-DE-SAC	1	LS	$ 72,999.00	$ 72,999.00
28	SOUTH CUL-DE-SAC	1	LS	$ 74,758.00	$ 74,758.00
29	CEDAR STREET APPROACH	1	LS	$ 90,881.00	$ 90,881.00
30	MARTIN'S ENTRANCE DRIVE	1	LS	$ 261,329.00	$ 261,329.00
31	MISCELLANEOUS ITEMS (25%)	1	LS	$ 1,722,810.00	$ 1,722,810.00
				2012 TOTAL	**$ 11,364,582.93**
				UNDERPASS BRIDGE COST	$ 10,042,000.00
				TEMPORARY RAILROAD RUNAROUND	$ 750,000.00
				STORMSEWER TRUNKLINE TO RIVER	$ 13,300,000.00
				FIBER OPTIC RELOCATION	$ 1,200,000.00
				NUMBER OF YEARS INFLATED	2
				INFLATION RATE	5%
				INFLATION AMOUNT	$ 3,757,300.00
				2014 TOTAL WITH FILBERT ALT. NO. 1	**$ 40,420,000.00**

McKINLEY GRADE SEPERATION

STATEMENT OF PROBABLE CONSTRUCTION COST ESTIMATE

UNDERPASS, SOUTH OPTION WITH FILBERT ALT. NO. 2

June 28, 2012

No.	Description	Quantity	Unit	Current Unit Price	Amount
1	CONSTRUCTION ENGINEERING (3%)	1	LS	$ 246,073.00	$ 246,073.00
2	MOBILIZATION AND DEMOBILIZATION (5%)	1	LS	$ 410,122.00	$ 410,122.00
3	CLEARING OF RIGHT OF WAY (5%)	1	LS	$ 410,122.00	$ 410,122.00
4	MAINTAINING TRAFFIC (5%)	1	LS	$ 1,610,122.00	$ 1,610,122.00
5	PCCP, 11 IN.	24,517	SYS	$ 50.00	$ 1,225,850.00
6	SUBBASE FOR PCCP	6,917	CYS	$ 35.00	$ 242,095.00
7	SUBGRADE TREATMENT, TYPE IA	18,496	SYS	$ 10.00	$ 184,960.00
8	INTEGRAL CURB	6,867	LFT	$ 12.00	$ 82,404.00
9	CONCRETE, SIDEWALK, 4 IN.	3,998	SYS	$ 35.00	$ 139,930.00
10	EXCAVATION, COMMON	83,625	CYS	$ 15.00	$ 1,254,375.00
11	12" PIPE	1,182	LFT	$ 24.00	$ 28,368.00
12	48" PIPE	3,598	LFT	$ 96.00	$ 345,408.00
13	STRUCTURE BACKFILL	10,070	CYS	$ 40.00	$ 402,800.00
14	INLET	18	EACH	$ 2,000.00	$ 36,000.00
15	MANHOLE	18	EACH	$ 5,000.00	$ 90,000.00
16	LIGHTING	1	LS	$ 100,000.00	$ 100,000.00
17	LANDSCAPING	1	LS	$ 300,000.00	$ 300,000.00
18	EROSION CONTROL	1	LS	$ 20,000.00	$ 20,000.00
19	PAVEMENT MARKING AND SIGNING	1	LS	$ 20,000.00	$ 20,000.00
20	PIPE, TYPE 4 CIRCULAR 6 IN	17,990	LFT	$ 12.00	$ 215,880.00
21	AGGREGATE FOR UNDERDRAINS	2,665	CYS	$ 5.00	$ 13,325.93
22	GEOTEXTILES FOR UNDERDRAIN	17,990	SYS	$ 2.00	$ 35,980.00
23	DEWATERING	1	LS	$ 200,000.00	$ 200,000.00
24	SANITARY SEWER AND WATER RELOCATIONS	1	LS	$ 678,000.00	$ 678,000.00
25	FILBERT ROAD ALTERNATE NO. 2	1	LS	$ 464,694.00	$ 464,694.00
26	WENT AVENUE SOUTH	1	LS	$ 139,607.00	$ 139,607.00
27	SOUTH CUL-DE-SAC	1	LS	$ 74,758.00	$ 74,758.00
28	CEDAR STREET APPROACH	1	LS	$ 90,881.00	$ 90,881.00
29	MARTIN'S ENTRANCE DRIVE	1	LS	$ 176,640.00	$ 176,640.00
30	MISCELLANEOUS ITEMS (25%)	1	LS	$ 1,640,489.00	$ 1,640,489.00
				2012 TOTAL	**$ 10,878,883.93**
				UNDERPASS BRIDGE COST	$ 10,042,000.00
				TEMPORARY RAILROAD RUNAROUND	$ 750,000.00
				STORMSEWER TRUNKLINE TO RIVER	$ 13,300,000.00
				FIBER OPTIC RELOCATION	$ 1,200,000.00
				NUMBER OF YEARS INFLATED	2
				INFLATION RATE	5%
				INFLATION AMOUNT	$ 3,707,600.00
				2014 TOTAL WITH FILBERT ALT. NO. 2	**$ 39,880,000.00**

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McKINLEY GRADE SEPERATION

STATEMENT OF PROBABLE CONSTRUCTION COST ESTIMATE

OVERPASS, NORTH OPTION WITH FILBERT ALT. NO. 1

June 28, 2012

No.	Description	Quantity	Unit	Current Unit Price	Amount
1	CONSTRUCTION ENGINEERING (3%)	1	LS	$ 192,417.00	$ 192,417.00
2	MOBILIZATION AND DEMOBILIZATION (5%)	1	LS	$ 320,695.00	$ 320,695.00
3	CLEARING OF RIGHT OF WAY (5%)	1	LS	$ 320,695.00	$ 320,695.00
4	MAINTAINING TRAFFIC (5%)	1	LS	$ 820,695.00	$ 820,695.00
5	PCCP, 11 IN.	20,977	SYS	$ 50.00	$ 1,048,850.00
6	SUBBASE FOR PCCP	5,513	CYS	$ 35.00	$ 192,955.00
7	SUBGRADE TREATMENT, TYPE IA	14,583	SYS	$ 10.00	$ 145,830.00
8	INTEGRAL CURB	3,860	LFT	$ 12.00	$ 46,320.00
9	CONCRETE, SIDEWALK, 4 IN.	2,146	SYS	$ 35.00	$ 75,110.00
10	EXCAVATION, COMMON	2,020	CYS	$ 15.00	$ 30,300.00
11	BORROW	32,626	CYS	$ 15.00	$ 489,390.00
12	12" PIPE	1,014	LFT	$ 24.00	$ 24,336.00
13	48" PIPE	3,585	LFT	$ 96.00	$ 344,160.00
14	STRUCTURE BACKFILL	9,984	CYS	$ 40.00	$ 399,360.00
15	INLET	18	EACH	$ 2,000.00	$ 36,000.00
16	MANHOLE	18	EACH	$ 5,000.00	$ 90,000.00
17	LIGHTING	1	LS	$ 100,000.00	$ 100,000.00
18	LANDSCAPING	1	LS	$ 300,000.00	$ 300,000.00
19	EROSION CONTROL	1	LS	$ 20,000.00	$ 20,000.00
20	PAVEMENT MARKING AND SIGNING	1	LS	$ 20,000.00	$ 20,000.00
21	DEWATERING	1	LS	$ 50,000.00	$ 50,000.00
22	SANITARY SEWER AND WATER RELOCATIONS	1	LS	$ 600,000.00	$ 600,000.00
23	FILBERT ROAD ALTERNATE NO. 1	1	LS	$ 636,292.00	$ 636,292.00
24	WENT AVENUE SOUTH	1	LS	$ 139,607.00	$ 139,607.00
25	NORTH CUL-DE-SAC	1	LS	$ 72,999.00	$ 72,999.00
26	SOUTH CUL-DE-SAC	1	LS	$ 106,636.00	$ 106,636.00
27	CEDAR STREET APPROACH	1	LS	$ 100,174.00	$ 100,174.00
28	MARTIN'S ENTRANCE DRIVE	1	LS	$ 62,803.00	$ 62,803.00
29	MISCELLANEOUS ITEMS (25%)	1	LS	$ 1,282,781.00	$ 1,282,781.00
				2012 TOTAL	**$ 8,068,405.00**
				OVERPASS BRIDGE COST	$ 6,450,000.00
				NUMBER OF YEARS INFLATED	2
				INFLATION RATE	5%
				INFLATION AMOUNT	$ 1,488,200.00
				2014 TOTAL WITH FILBERT ALT. NO. 1	**$ 16,010,000.00**

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McKINLEY GRADE SEPERATION

STATEMENT OF PROBABLE CONSTRUCTION COST ESTIMATE

OVERPASS, NORTH OPTION WITH FILBERT ALT. NO. 2

June 28, 2012

No.	Description	Quantity	Unit	Current Unit Price	Amount
1	CONSTRUCTION ENGINEERING (3%)	1	LS	$ 187,463.00	$ 187,463.00
2	MOBILIZATION AND DEMOBILIZATION (5%)	1	LS	$ 312,439.00	$ 312,439.00
3	CLEARING OF RIGHT OF WAY (5%)	1	LS	$ 312,439.00	$ 312,439.00
4	MAINTAINING TRAFFIC (5%)	1	LS	$ 812,439.00	$ 812,439.00
5	PCCP, 11 IN.	20,977	SYS	$ 50.00	$ 1,048,850.00
6	SUBBASE FOR PCCP	5,513	CYS	$ 35.00	$ 192,955.00
7	SUBGRADE TREATMENT, TYPE IA	14,583	SYS	$ 10.00	$ 145,830.00
8	INTEGRAL CURB	3,860	LFT	$ 12.00	$ 46,320.00
9	CONCRETE, SIDEWALK, 4 IN.	2,146	SYS	$ 35.00	$ 75,110.00
10	EXCAVATION, COMMON	2,020	CYS	$ 15.00	$ 30,300.00
11	BORROW	32,626	CYS	$ 15.00	$ 489,390.00
12	12" PIPE	1,014	LFT	$ 24.00	$ 24,336.00
13	48" PIPE	3,585	LFT	$ 96.00	$ 344,160.00
14	STRUCTURE BACKFILL	9,984	CYS	$ 40.00	$ 399,360.00
15	INLET	18	EACH	$ 2,000.00	$ 36,000.00
16	MANHOLE	18	EACH	$ 5,000.00	$ 90,000.00
17	LIGHTING	1	LS	$ 100,000.00	$ 100,000.00
18	LANDSCAPING	1	LS	$ 300,000.00	$ 300,000.00
19	EROSION CONTROL	1	LS	$ 20,000.00	$ 20,000.00
20	PAVEMENT MARKING AND SIGNING	1	LS	$ 20,000.00	$ 20,000.00
21	DEWATERING	1	LS	$ 50,000.00	$ 50,000.00
22	SANITARY SEWER AND WATER RELOCATIONS	1	LS	$ 600,000.00	$ 600,000.00
23	FILBERT ROAD ALTERNATE NO. 2	1	LS	$ 577,188.00	$ 577,188.00
24	WENT AVENUE SOUTH	1	LS	$ 139,607.00	$ 139,607.00
25	SOUTH CUL-DE-SAC	1	LS	$ 106,636.00	$ 106,636.00
26	CEDAR STREET APPROACH	1	LS	$ 100,174.00	$ 100,174.00
27	MARTIN'S ENTRANCE DRIVE	1	LS	$ 62,803.00	$ 62,803.00
28	MISCELLANEOUS ITEMS (25%)	1	LS	$ 1,249,755.00	$ 1,249,755.00
				2012 TOTAL	**$ 7,873,554.00**
				OVERPASS BRIDGE COST	$ 6,450,000.00
				NUMBER OF YEARS INFLATED	2
				INFLATION RATE	5%
				INFLATION AMOUNT	$ 1,468,200.00
				2014 TOTAL WITH FILBERT ALT. NO. 2	**$ 15,800,000.00**

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McKINLEY GRADE SEPERATION

STATEMENT OF PROBABLE CONSTRUCTION COST ESTIMATE

OVERPASS, SOUTH OPTION WITH FILBERT ALT. NO. 1

June 28, 2012

No.	Description	Quantity	Unit	Current Unit Price	Amount
1	CONSTRUCTION ENGINEERING (3%)	1	LS	$ 180,988.00	$ 180,988.00
2	MOBILIZATION AND DEMOBILIZATION (5%)	1	LS	$ 301,647.00	$ 301,647.00
3	CLEARING OF RIGHT OF WAY (5%)	1	LS	$ 301,647.00	$ 301,647.00
4	MAINTAINING TRAFFIC (5%)	1	LS	$ 801,647.00	$ 801,647.00
5	PCCP, 11 IN.	20,727	SYS	$ 50.00	$ 1,036,350.00
6	SUBBASE FOR PCCP	5,430	CYS	$ 35.00	$ 190,050.00
7	SUBGRADE TREATMENT, TYPE IA	13,449	SYS	$ 10.00	$ 134,490.00
8	INTEGRAL CURB	3,560	LFT	$ 12.00	$ 42,720.00
9	CONCRETE, SIDEWALK, 4 IN.	1,978	SYS	$ 35.00	$ 69,230.00
10	EXCAVATION, COMMON	2,010	CYS	$ 15.00	$ 30,150.00
11	BORROW	31,984	CYS	$ 15.00	$ 479,760.00
12	12" PIPE	999	LFT	$ 24.00	$ 23,976.00
13	48" PIPE	3,585	LFT	$ 96.00	$ 344,160.00
14	STRUCTURE BACKFILL	9,980	CYS	$ 40.00	$ 399,200.00
15	INLET	18	EACH	$ 2,000.00	$ 36,000.00
16	MANHOLE	18	EACH	$ 5,000.00	$ 90,000.00
17	LIGHTING	1	LS	$ 100,000.00	$ 100,000.00
18	LANDSCAPING	1	LS	$ 300,000.00	$ 300,000.00
19	EROSION CONTROL	1	LS	$ 20,000.00	$ 20,000.00
20	PAVEMENT MARKING AND SIGNING	1	LS	$ 20,000.00	$ 20,000.00
21	DEWATERING	1	LS	$ 50,000.00	$ 50,000.00
22	SANITARY SEWER AND WATER RELOCATIONS	1	LS	$ 100,000.00	$ 100,000.00
23	FILBERT ROAD ALTERNATE NO. 1	1	LS	$ 660,422.00	$ 660,422.00
24	WENT AVENUE SOUTH	1	LS	$ 170,542.00	$ 170,542.00
25	NORTH CUL-DE-SAC	1	LS	$ 72,999.00	$ 72,999.00
26	SOUTH CUL-DE-SAC	1	LS	$ 116,891.00	$ 116,891.00
27	CEDAR STREET APPROACH	1	LS	$ 87,208.00	$ 87,208.00
28	MARTIN'S ENTRANCE DRIVE	1	LS	$ 252,199.00	$ 252,199.00
29	MISCELLANEOUS ITEMS (25%)	1	LS	$ 1,206,587.00	$ 1,206,587.00
				2012 TOTAL	**$ 7,618,863.00**
				OVERPASS BRIDGE COST	$ 6,450,000.00
				NUMBER OF YEARS INFLATED	2
				INFLATION RATE	5%
				INFLATION AMOUNT	$ 1,442,100.00
				2014 TOTAL WITH FILBERT ALT. NO. 1	**$ 15,520,000.00**

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McKINLEY GRADE SEPERATION

STATEMENT OF PROBABLE CONSTRUCTION COST ESTIMATE

OVERPASS, SOUTH OPTION WITH FILBERT ALT. NO. 2

June 28, 2012

No.	Description	Quantity	Unit	Current Unit Price	Amount
1	CONSTRUCTION ENGINEERING (3%)	1	LS	$ 177,665.00	$ 177,665.00
2	MOBILIZATION AND DEMOBILIZATION (5%)	1	LS	$ 296,108.00	$ 296,108.00
3	CLEARING OF RIGHT OF WAY (5%)	1	LS	$ 296,108.00	$ 296,108.00
4	MAINTAINING TRAFFIC (5%)	1	LS	$ 796,108.00	$ 796,108.00
5	PCCP, 11 IN.	20,727	SYS	$ 50.00	$ 1,036,350.00
6	SUBBASE FOR PCCP	5,430	CYS	$ 35.00	$ 190,050.00
7	SUBGRADE TREATMENT, TYPE IA	13,449	SYS	$ 10.00	$ 134,490.00
8	INTEGRAL CURB	3,560	LFT	$ 12.00	$ 42,720.00
9	CONCRETE, SIDEWALK, 4 IN.	1,978	SYS	$ 35.00	$ 69,230.00
10	EXCAVATION, COMMON	2,010	CYS	$ 15.00	$ 30,150.00
11	BORROW	31,984	CYS	$ 15.00	$ 479,760.00
12	12" PIPE	999	LFT	$ 24.00	$ 23,976.00
13	48" PIPE	3,585	LFT	$ 96.00	$ 344,160.00
14	STRUCTURE BACKFILL	9,980	CYS	$ 40.00	$ 399,200.00
15	INLET	18	EACH	$ 2,000.00	$ 36,000.00
16	MANHOLE	18	EACH	$ 5,000.00	$ 90,000.00
17	LIGHTING	1	LS	$ 100,000.00	$ 100,000.00
18	LANDSCAPING	1	LS	$ 300,000.00	$ 300,000.00
19	EROSION CONTROL	1	LS	$ 20,000.00	$ 20,000.00
20	PAVEMENT MARKING AND SIGNING	1	LS	$ 20,000.00	$ 20,000.00
21	DEWATERING	1	LS	$ 50,000.00	$ 50,000.00
22	SANITARY SEWER AND WATER RELOCATIONS	1	LS	$ 100,000.00	$ 100,000.00
23	FILBERT ROAD ALTERNATE NO. 2	1	LS	$ 655,051.00	$ 655,051.00
24	WENT AVENUE SOUTH	1	LS	$ 170,542.00	$ 170,542.00
25	SOUTH CUL-DE-SAC	1	LS	$ 106,636.00	$ 106,636.00
26	CEDAR STREET APPROACH	1	LS	$ 87,208.00	$ 87,208.00
27	MARTIN'S ENTRANCE DRIVE	1	LS	$ 252,199.00	$ 252,199.00
28	MISCELLANEOUS ITEMS (25%)	1	LS	$ 1,184,431.00	$ 1,184,431.00
				2012 TOTAL	**$ 7,488,142.00**
				OVERPASS BRIDGE COST	$ 6,450,000.00
				NUMBER OF YEARS INFLATED	2
				INFLATION RATE	5%
				INFLATION AMOUNT	$ 1,428,700.00
				2014 TOTAL WITH FILBERT ALT. NO. 2	**$ 15,370,000.00**

M:\PROJ\1261\2027\Civil\Eng\Cost Estimate\[Cost Estimate.xls]Summary

APPENDIX H

Draft Geotechnical Report

DLZ

ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

Founded in 1916
OVER 90 YEARS
DESIGN EXCELLENCE

May 15, 2012

Mr. Qasim Asghar
DLZ Indiana LLC
2211 E. Jefferson Boulevard
South Bend, IN 46615

Re: Preliminary Geotechnical Investigation
Proposed McKinley Grade Separation Project
McKinley Highway, Between Division and Cedar Streets
Mishawaka, IN
DLZ A/N: 1261-2027-90

Dear Mr. Asghar:

In accordance with your request, DLZ Industrial LLC (DLZ) performed a Preliminary Geotechnical Investigation at the above referenced project. The purpose of this investigation was to drill two (2) test borings to approximately eighty feet (80') below existing ground surface and obtain preliminary soil and groundwater level information, relative to the construction of the proposed highway underpass.

Two (2) soil borings, designated as B-1 and B-2, were drilled with a Diedrich D120 truck mounted drilling rig. The borings were advanced with a combination of hollow stem augers and mud rotary drilling techniques to a depth of approximately eighty feet (80') below the existing ground surface. A copy of the Boring Location Plan is included with this report.

Detailed soil descriptions, groundwater observations and the results of field and laboratory tests may be found on the accompanying Log of Soil Test Boring sheet and Summary of Laboratory Test Results.

SUBSURFACE CONDITIONS

Boring B-1 encountered approximately one foot (1') of topsoil, followed by approximately eighteen feet (18') of dark brown to brown, loose to medium dense, fine to coarse sand and gravel. These granular soils were further underlain by deposits of hard silt, very stiff to hard clay and dense to very dense fine to coarse sand that continued to the bottom of the borehole at approximately eighty feet (80') below existing ground surface.

Boring B-2 three and one-half inches (3.5") of asphalt pavement, underlain by approximately eight and one-half inches (8.5") of g ravel base, followed by approximately seven feet six inches (7'-6") of loose

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and very loose granular soil, underlain by approximately nineteen feet (19') of hard gray clay with some gravel. Underlying the hard gray clay was approximately five feet (5') of hard gray silt, followed by approximately thirty-five feet six inches (35'-6") of dense to very dense brown and gray fine sand. The remainder of the boring consisted of hard gray clay to the termination depth of approximately eighty feet (80') below the existing ground surface.

Water was measured during the drilling operation at a depth of approximately eight feet six inches (8'-6") below existing grade in both borings. The water level was measured in the borings after twenty-four (24) hours and found to be at approximately seven feet nine inches (7'-9") and three feet two inches (3'-2") below existing ground surface, in Borings B-1 and B-2, respectively.

Please note that the short-term groundwater observations made in the boreholes are not considered a reliable indicator of the water levels at the site. Water levels may fluctuate due to rainfall, surface drainage, site topography and other climatic factors. During construction, or at other times during the project life the water level may be higher or lower than what was observed at the time of our investigation.

Stratification lines shown on the boring log are approximate indications of change from one soil type to another and are not intended to represent an area of exact geological change.

Upon completion of the drilling operation, the boreholes were backfilled with grout and patched appropriately with either asphalt cold patch or sod.

RESULTS OF FIELD AND LABORATORY TEST DATA

Field Tests

Standard Penetration Tests (SPT) conducted during the sampling operation indicate that the native site soils vary in strength and density. Penetration indices ranged from three (3) to twenty-five (25) blows per foot within the upper ten feet (10') of the borings. Below the approximate ten foot (10') level to a depth of approximately fifty feet (50'), the blow counts ranged from sixteen (16) blows per foot to fifty (50) blows for five inches (5") of penetration. Below the approximate fifty foot (50') depth, blow counts

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Proposed McKinley Grade Separation Project
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were generally in the range of fifty (50) blows for three inches (3") to five and one-half inches (5.5") of penetration. Boring B-1 terminated in material with an "N" value of fifty (50) blows for five and one-half inches (5.5") of penetration, while Boring B-2 terminated in material with an "N" value of forty-two (42) blows per foot.

Hand calibrated penetrometer readings conducted on the clay samples during sample recovery were either at, or in excess of four and one-half tons per square foot (4.5 tsf).

Laboratory Tests

A total of six (6) granular samples were selected for testing of the following: as-received moisture content and grain size distribution.

Results of the as-received moisture contents ranged from four percent (4.0%) to nineteen percent (19.0%). Grain size (sieve) tests indicate that the tested samples fall within the range of fine to coarse sand. A copy of the Summary of Laboratory Test Results and Gradation Curves is included with this report.

CONCLUSIONS

This report was compiled for the purpose of obtaining preliminary soil and groundwater information relative to the construction of the proposed McKinley Highway Underpass.

The soils encountered in the test borings were predominantly granular within the approximate upper twenty-eight feet (28'), or so, in Boring B-1 and the upper thirteen feet (13') of Boring B-2. Below these approximate depths, the soils were mostly silty clays and clayey silts, with some intermittent layers of granular soil, with both borings terminating in what was described as hard gray clay, or hard gray silty clay.

Twenty-four (24) hour water level readings recorded at the boring locations gave a water level of approximately seven feet nine inches (7'-9") below existing ground surface at the location of Borings B-1 and three feet two inches (3'-2") at the location of Boring B-2.

May 15, 2012

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Experience indicates that the actual subsoil conditions at the site could vary from those generalized on the basis of two (2) soil test borings made at a specific location. It is, therefore, essential that DLZ be notified of any variation of soil conditions to determine their effects on the recommendations presented.

If we can be of any further service, please feel free to call.

Very truly yours,

DLZ INDUSTRIAL, LLC

Steven C. Pelto, M.S., P.E.
Senior Project Manager

Cc: kss, csn, cmd

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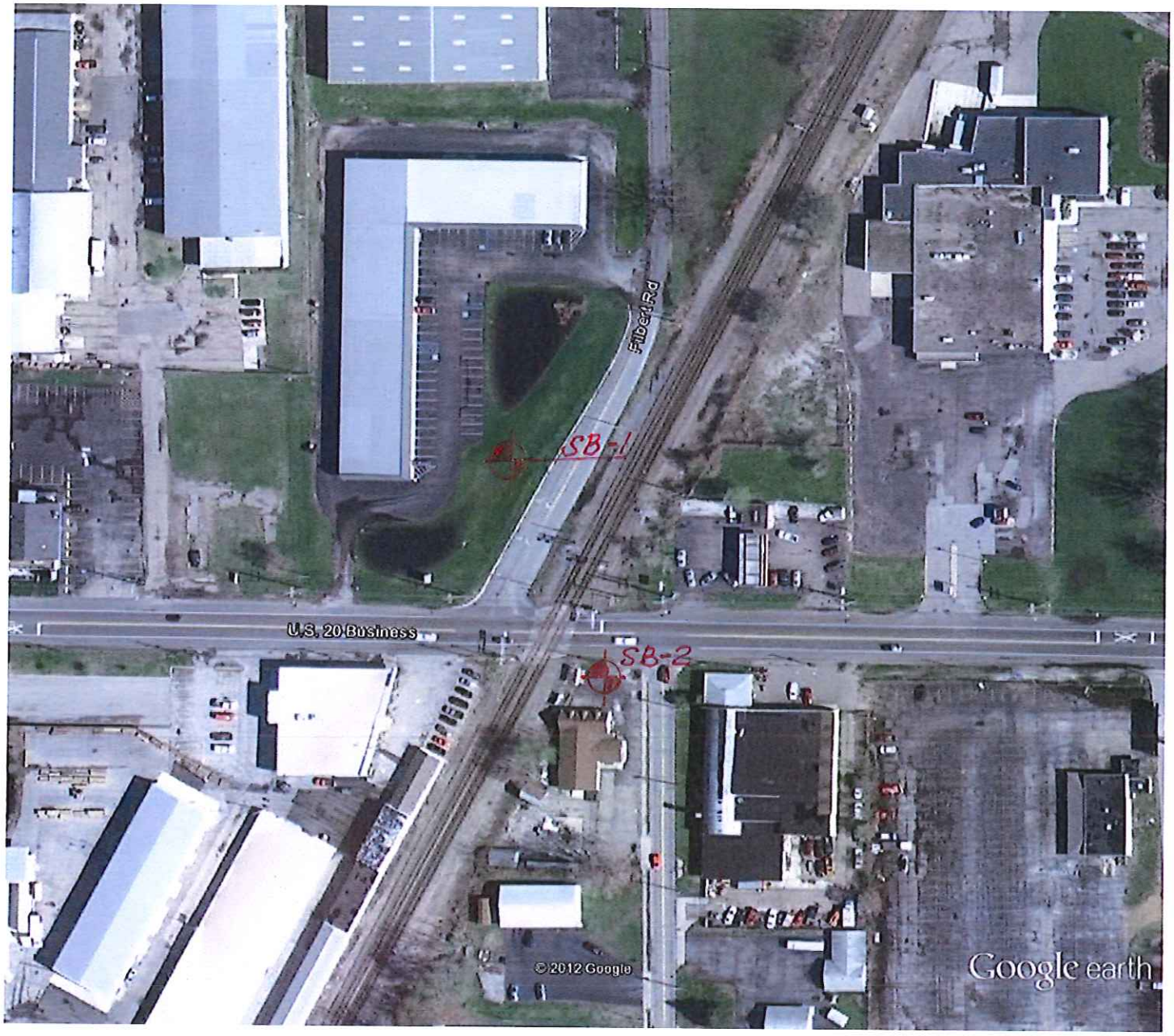

Google earth

feet 500
meters 100

Soil Boring Location Plan

5-8-12

1261-2027-90

DLZ
SOUTH BEND INDIANAPOLIS BURNS HARBOR
HAMMOND FORT WAYNE

DLZ INDUSTRIAL
316 Tech Drive Burns Harbor, IN 46304
Phone: (219) 764-4700
Fax: (219) 764-4156

Date: 5-8-12 Job Name: McKinley Grade Separation
Job No: 1261-2027-90 Job Address: Mishawaka, IN
Driller: PDLC Boring # : 1 Drill Rig: T-114
Helper: RP Boring Offset: Hammer Weight: 140 lb

SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE MOISTURE (Dry, Damp, Moist, Wet)	NUMBER OF BLOWS PER 6"	STRATA CHANGE DEPTH	CLASSIFICATION (Remarks include color, density, loss wash water, seams in rock, auger or spoon refusal etc.
0	1.0'	—	—	M	—		Topsoil
					Rec=		
					P=	1'-0"	
1.0	2.5	SS	1	M	5 5 6		Medium dense dark brown
					Rec= 16"		fine SAND & GRAVEL
					P= —		
3.5	5.0	SS	2	M	3 2 5		(No Recovery)
					Rec= 0"		
					P= —	6'-0"	
6.0	7.5	SS	3	M	2 3 6		Loose brown fine to
					Rec= 10"		coarse SAND & GRAVEL
					P= —	9'-0"	
8.5	10.0	SS	4	W	3 2 23		Medium dense brown
					Rec= 6"		coarse SAND & GRAVEL
					P= —	13'-6"	
13.5	15.0	SS	5	W	6 8 19		Medium dense brown
					Rec= 12"		fine SAND
					P= —	19'-0"	
18.5	20.0	SS	6	M	3 6 17		Hard gray CLAY, some
					Rec= 6"		silt content
					P= 4.5 tsf	23'-6"	
23.5	25.0	SS	7	W	9 13 20		Dense gray fine-coarse
					Rec= 12"		SAND & GRAVEL
					P= —	28'-6"	
28.5	30.0	SS	8	M	6 8 16		Hard gray silty CLAY
					Rec= 10"		
					P= 4.5 +		

GENERAL NOTES:

GROUND WATER OBSERVATION
At 8.5 ft, during drilling
At 7.75 ft, after 24 hr
At _____ ft, after _____ hr
Boring stopped by _____

DLZ
SOUTH BEND INDIANAPOLIS BURNS HARBOR
HAMMOND FORT WAYNE

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Date: 5-8-12 Job Name: McKinley Grade Separation
Job No: 1261-2027-90 Job Address: Mishawaka, IN
Driller: PDLC Boring #: 1 Drill Rig: T-114
Helper: RP Boring Offset: Hammer Weight: 140 lb

SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE MOISTURE (Dry, Damp, Moist, Wet)	NUMBER OF BLOWS PER 6"	STRATA CHANGE DEPTH	CLASSIFICATION (Remarks include color, density, loss wash water, seams in rock, auger or spoon refusal etc.
33.5	35.0	SS	9	M	8 7 9		Very stiff gray silty CLAY
					Rec= 18"		
					P= 4.0		
38.5	40.0	SS	10	—	14 18 30		(No Recovery)
					Rec= 0		
					P= —		
43.5	45.0	SS	11	M	14 16 26		Hard gray silt
					Rec= 12"		
					P= 4.5		
48.5	50.0	SS	12	M	14 28 44		Same
					Rec= 18"		
					P= 4.5		
53.5	55.0	SS	13	M	49 50/3½"	53'-6"	Very dense gray silty fine SAND
					Rec= 6"		
					P= —		
58.5	60.0	SS	14	W	35 50/5½"	58'-6"	Very dense gray fine SAND
					Rec= 10"		
					P=		
63.5	65.0	SS	15	W	43 50/3"		Same
					Rec= 12"		
					P= —		
68.5	70.0	SS	16	W	50/3"		Same
					Rec= 4"		
					P= —		
73.5	75.0	SS	17	W	14 23 27	73'-6"	Very dense gray SILT
					Rec= 16"		
					P= —		

GENERAL NOTES:

GROUND WATER OBSERVATION
At 8.5 ft, during drilling
At 7.75 ft, after 24 hr
At ____ ft, after ____ hr
Boring stopped by ____

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SOUTH BEND INDIANAPOLIS BURNS HARBOR
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316 Tech Drive Burns Harbor, IN 46304
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Sheet 3 of 3

Date: 5-8-12
Job Name: McKinley Grade Separation
Job No: 1261-2027-90
Job Address: Mishawaka, IN
Driller: PDLC
Boring # : 1
Drill Rig: T-114
Helper: RP
Boring Offset:
Hammer Weight: 140 lb

SAMPLE DEPTH		SAMPLE TYPE	SAMPLE NUMBER	SAMPLE MOISTURE (Dry, Damp, Moist, Wet)	NUMBER OF BLOWS PER 6"	STRATA CHANGE DEPTH	CLASSIFICATION (Remarks include color, density, loss wash water, seams in rock, auger or spoon refusal etc.
FROM	TO						
78.5	80.0	SS	18	M	50/5 1/2 "		Hard gray silty CLAY
					Rec= 6"		E.O.B. @ 80'
					P= 4.5		
					Rec=		
					P=		
					Rec=		
					P=		
					Rec=		
					P=		
					Rec=		
					P=		
					Rec=		
					P=		
					Rec=		
					P=		
					Rec=		
					P=		
					Rec=		
					P=		

GENERAL NOTES:

GROUND WATER OBSERVATION
At 8.5 ft, during drilling
At 7.75 ft, after 24 hr
At ft, after hr
Boring stopped by

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DLZ INDUSTRIAL
316 Tech Drive Burns Harbor, IN 46304
Phone: (219) 764-4700
Fax: (219) 764-4156

Date: 4-12-12 Job Name: McKinley Grade Seperation
Job No: 1261-2027-90 Job Address: Mishawaka, IN
Driller: PDLC Boring #: 2 Drill Rig: T-114
Helper: RP Boring Offset: Hammer Weight: 140 lb

SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE MOISTURE (Dry, Damp, Moist, Wet)	NUMBER OF BLOWS PER 6"	STRATA CHANGE DEPTH	CLASSIFICATION (Remarks include color, density, loss wash water, seams in rock, auger or spoon refusal etc.
0	1.0	—	—	—	— — — —		3½" Asphalt & 8.5" base
					Rec=		
					P=		
1.0	2.5	SS	1	M	5 5 4	1'-0"	Loose dark brown fine
					Rec= 11"		SAND & GRAVEL
					P= —		
3.5	5.0	SS	2	M	4 2 1	3'-6"	Very Loose dark brown
					Rec= 8"		fine SAND w/GRAVEL
					P= —		
6.0	7.5	SS	3	M	1 1 3	6'-0"	Very loose brown fine
					Rec= 12"		SAND
					P= —		
8.5	10.0	SS	4	W	6 11 10	8'-8"	Medium dense brown
					Rec= 12"		fine to coarse SAND &
					P= —		GRAVEL
13.5	15.0	SS	5	M	12 26 41	13'-6"	Hard gray CLAY w/GRAVEL
					Rec= 14"		
					P= 4.5 + ~~5+~~		
18.5	20.0	SS	6	M	16 36 50/5½"		Same
					Rec= 14"		
					P= 4.5 +		
23.5	25.0	SS	7	M	25 44 50/5"		Same
					Rec= 15"		
					P= 4.5 +		
28.5	30.0	SS	8	M	13 28 40		Same
					Rec= 15"		
					P= 4.5		

GENERAL NOTES:

GROUND WATER OBSERVATION
At 8.5 ft, during drilling
At 3.2 ft, after 24 hr
At ____ ft, after ____ hr
Boring stopped by ____

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DLZ INDUSTRIAL
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Phone: (219) 764-4700
Fax: (219) 764-4156

Date: 4-12-12 Job Name: McKinley Grade Separation
Job No: 1261-2027-90 Job Address: Mishawaka, IN
Driller: PDLC Boring #: 2 Drill Rig: T-114
Helper: RP Boring Offset: Hammer Weight: 140 lb

SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE MOISTURE (Dry, Damp, Moist, Wet)	NUMBER OF BLOWS PER 6"	STRATA CHANGE DEPTH	CLASSIFICATION (Remarks include color, density, loss wash water, seams in rock, auger or spoon refusal etc.
33.5	35.0	SS	9	M	19 25 35		Hard gray SILT
					Rec= 16"		
					P= 4.5		
38.5	40.0	SS	10	W	16 23 24	38'-6"	Dense gray Medium to
					Rec= 24"		fine SAND, some GRAVEL
					P= —		
43.5	45.0	SS	11	W	15 27 34	43'-6"	V. dense gray fine
					Rec= 18"		SAND
					P= —		
48.5	50.0	SS	12	W	21 26 23	48'-6"	Dense gray fine SAND
					Rec= 19"		
					P= —		
53.5	55.0	SS	13	W	22 24 23	53'-6"	Dense brown fine SAND
					Rec= 22"		
					P= —		
58.5	60.0	SS	14	W	23 25 30	58'-6"	Very dense brown fine
					Rec= 20"		SAND
					P= —		
63.5	65.0	SS	15	W	50/5"		Same
					Rec= 8"		
					P= —		
68.5	70.0	SS	16	W	49 50/3"		Same
					Rec= 8"		
					P= —		
73.5	75.0	SS	17	M	8 15 26	74'-0"	Hard gray CLAY
					Rec= 12"		
					P= 4.5		

GENERAL NOTES:

GROUND WATER OBSERVATION
At 8.5 ft, during drilling
At 3.2 ft, after 24 hr
At ____ ft, after ____ hr
Boring stopped by ____

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HAMMOND FORT WAYNE

DLZ INDUSTRIAL
316 Tech Drive Burns Harbor, IN 46304
Phone: (219) 764-4700
Fax: (219) 764-4156

Date: 4-12-12 Job Name: McKinley Grade Separation
Job No: 1261-2027-90 Job Address: Mishawaka, IN
Driller: PDLC Boring # : 2 Drill Rig: T-114
Helper: RP Boring Offset: Hammer Weight: 140 lb

SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE MOISTURE (Dry, Damp, Moist, Wet)	NUMBER OF BLOWS PER 6"	STRATA CHANGE DEPTH	CLASSIFICATION (Remarks include color, density, loss wash water, seams in rock, auger or spoon refusal etc.
78.5	80.0	SS	18	M	10 | 18 | 24		Hard gray CLAY
					Rec= 12"		E.O.B. @ 80'
					P= 4.5		
					Rec=		
					P=		
					Rec=		
					P=		
					Rec=		
					P=		
					Rec=		
					P=		
					Rec=		
					P=		
					Rec=		
					P=		
					Rec=		
					P=		

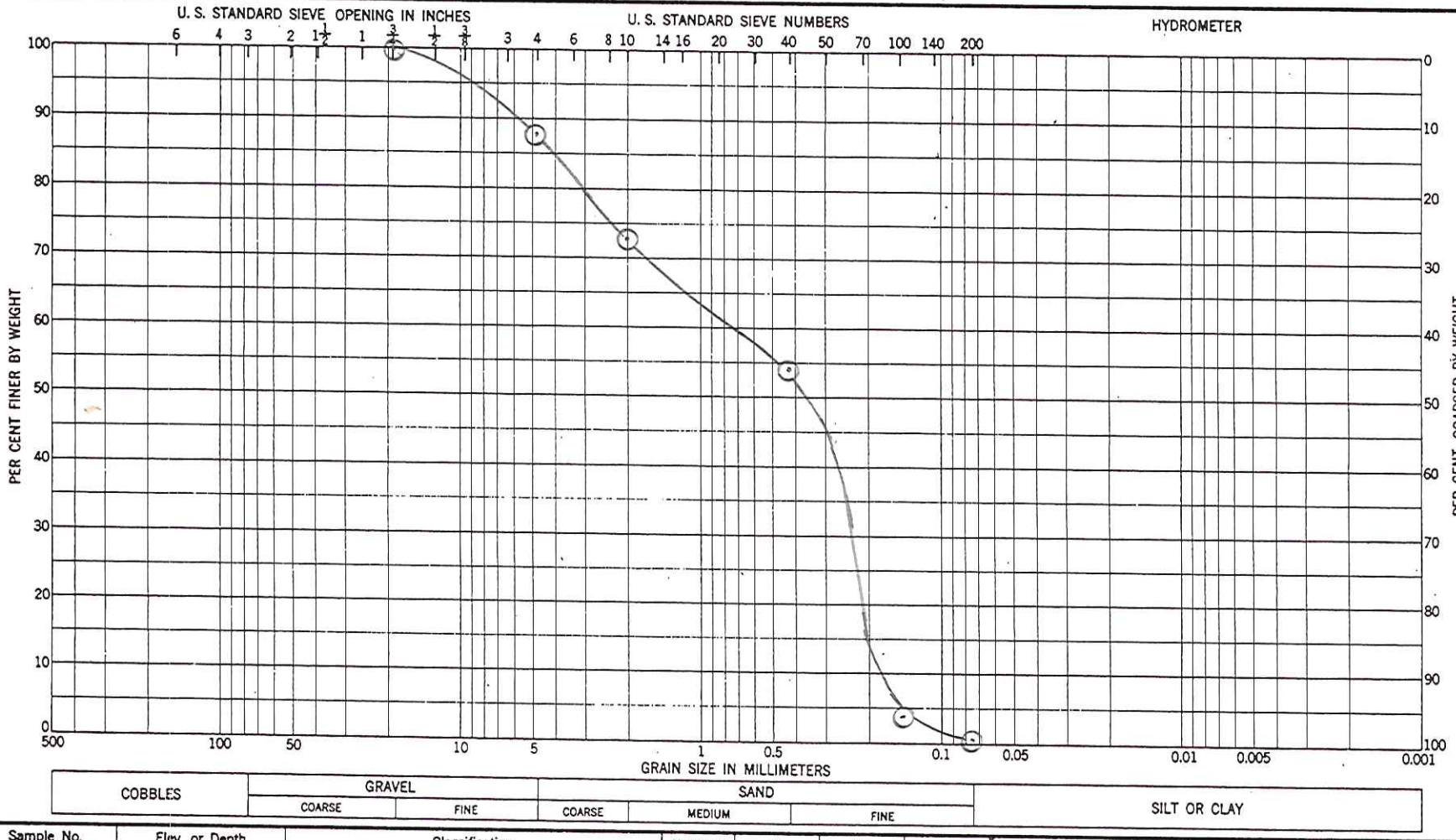
GENERAL NOTES:

GROUND WATER OBSERVATION
At 8.5 ft, during drilling
At 3.2 ft, after 24 hr
At ____ ft, after ____ hr
Boring stopped by ____

1261-2027-90

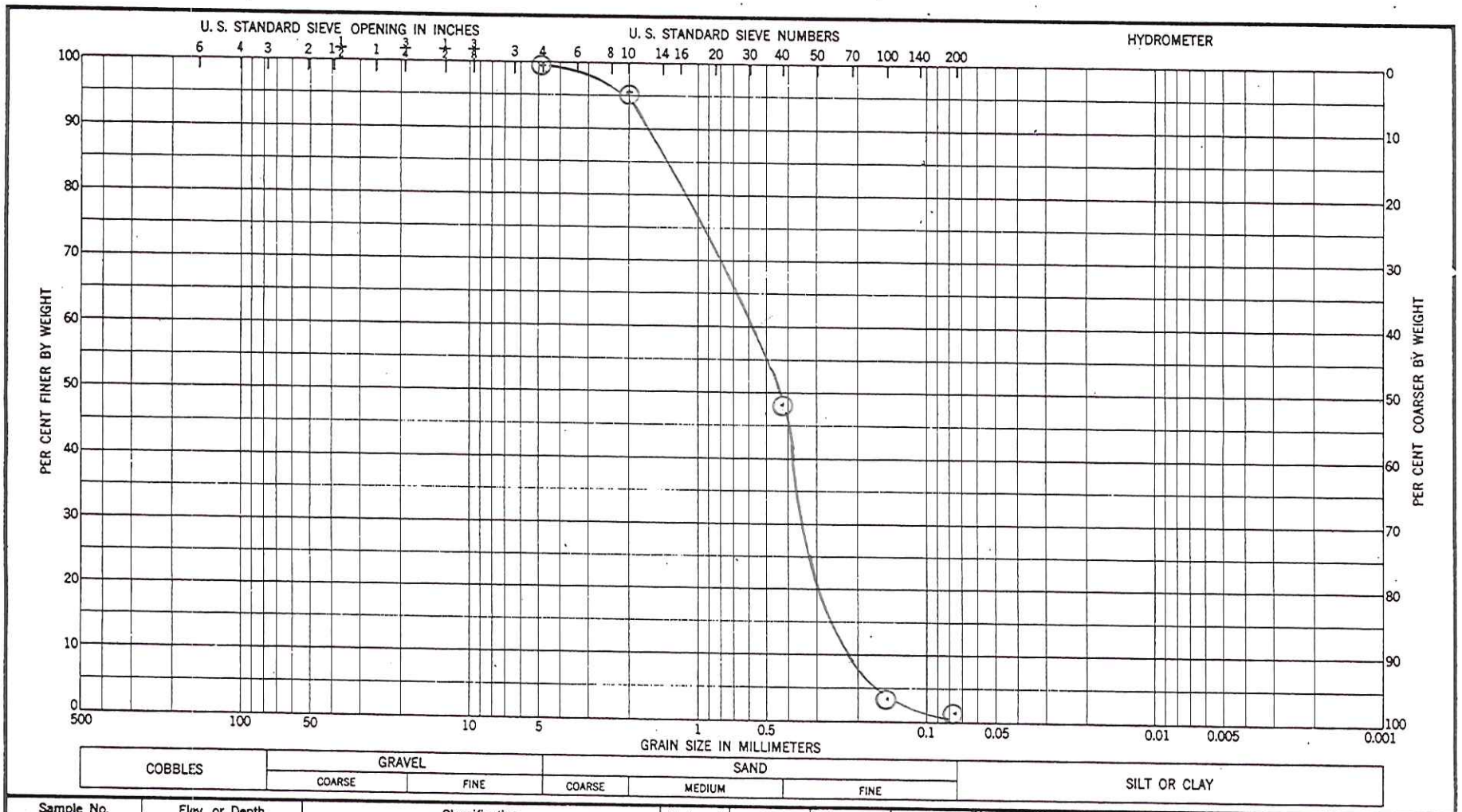
SUMMARY OF LABORATORY TEST RESULTS

				Atterberg Limits			Sieve Analysis, % finer by weight				
Sample No.	Depth Range, Ft.	PP, psf	%w	LL, %	PL, %	PI, %	(-) #4	(-) # 10	(-) #40	(-) #100	(-) #200
B-1, SS-1	1.0 - 2.5		4.0				87.5	73.0	54.6	4.8	0.4
B-1, SS-3	6.0 - 7.5		12.7				99.8	95.3	48.5	4.3	1.0
B-1, SS-5	13.5 - 15.0		13.1				88.1	84.9	74.5	20.1	1.4
B-1, SS-7	23.5 - 25.0		14.4				97.7	91.3	22.4	2.1	0.2
B-2, SS-2	3.5 - 5.0		6.1				69.2	65.4	43.9	4.4	0.4
B-2, SS-4	8.5 - 10.0		19.0				86.4	82.1	21.4	1.9	0.2



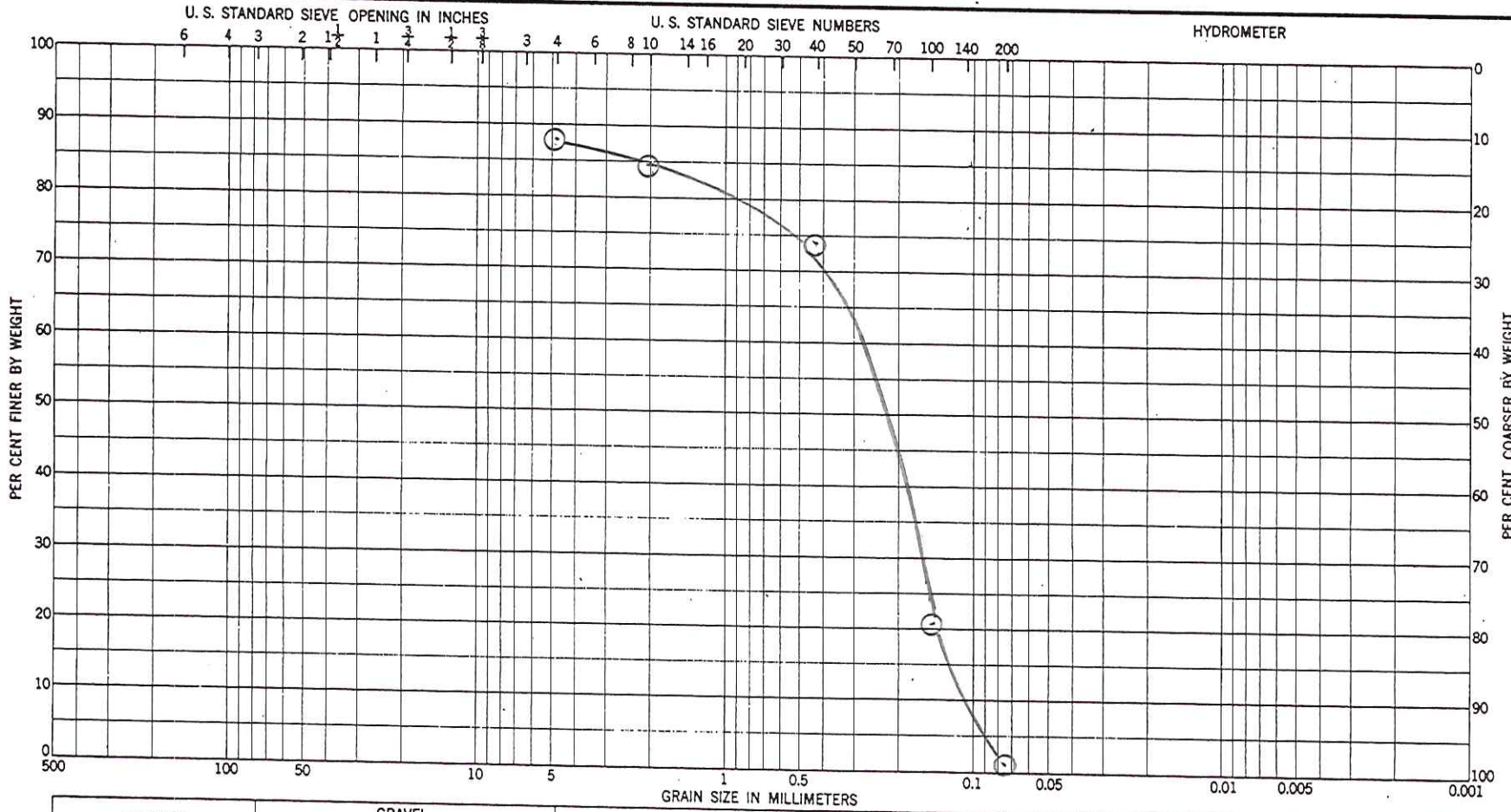
Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
B-1/SS-1	1.0'-2.5'		4.0			

GRADATION CURVES



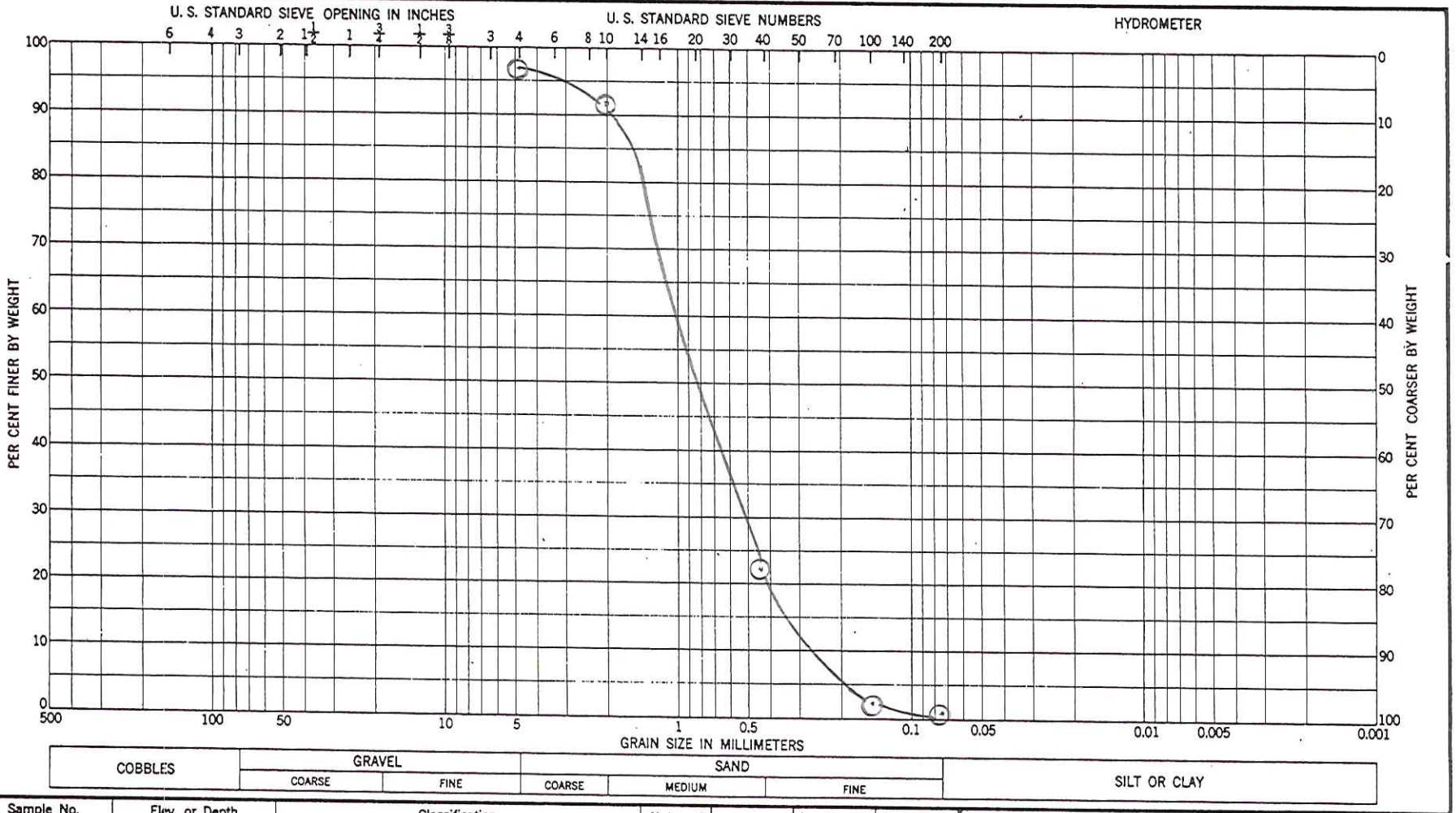
Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
B-1/SS-3	6.0'-7.5'		12.7			

GRADATION CURVES



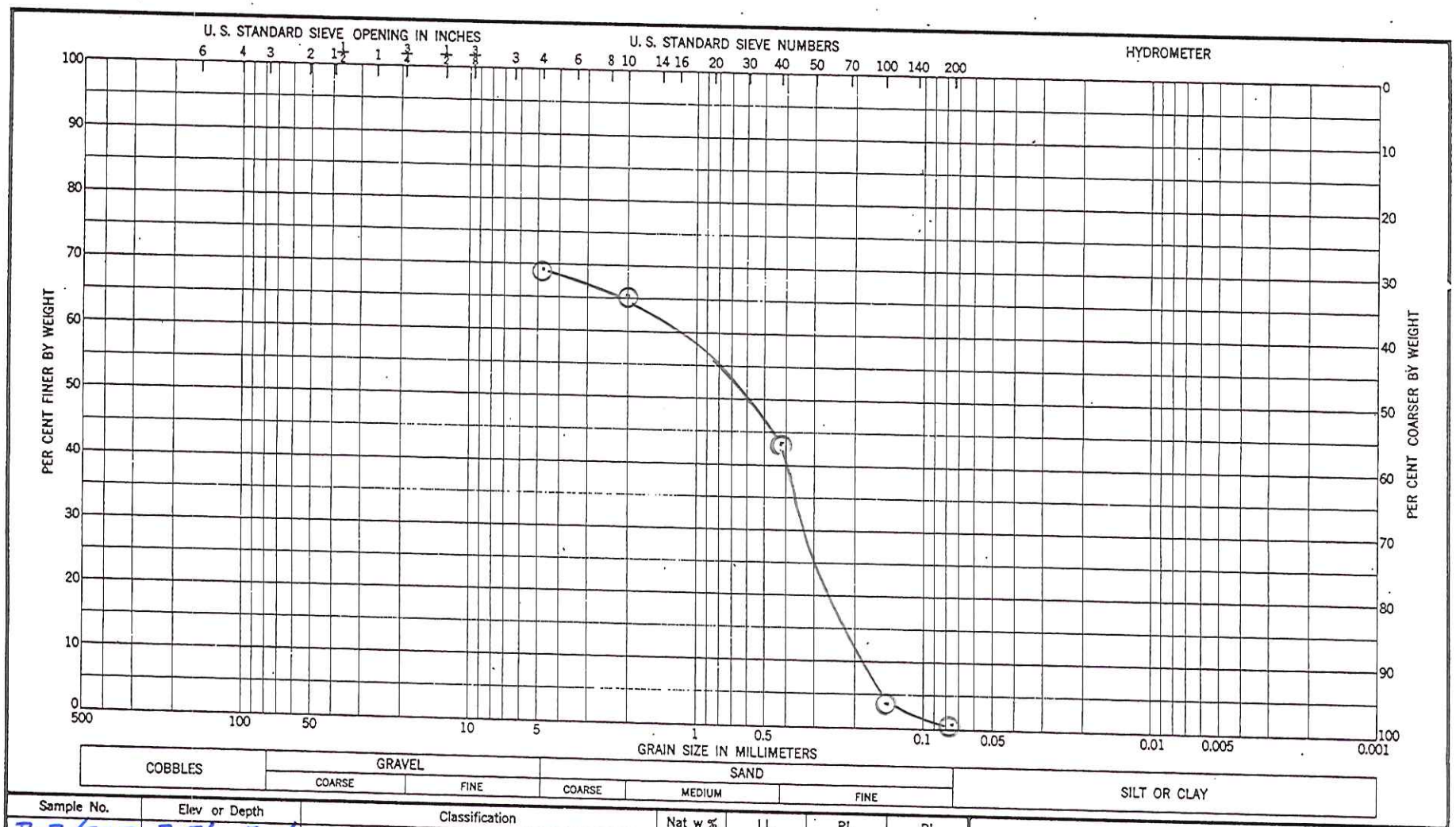
Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
B-1/SS-5	13.5' - 15.0'		13.1			

GRADATION CURVES



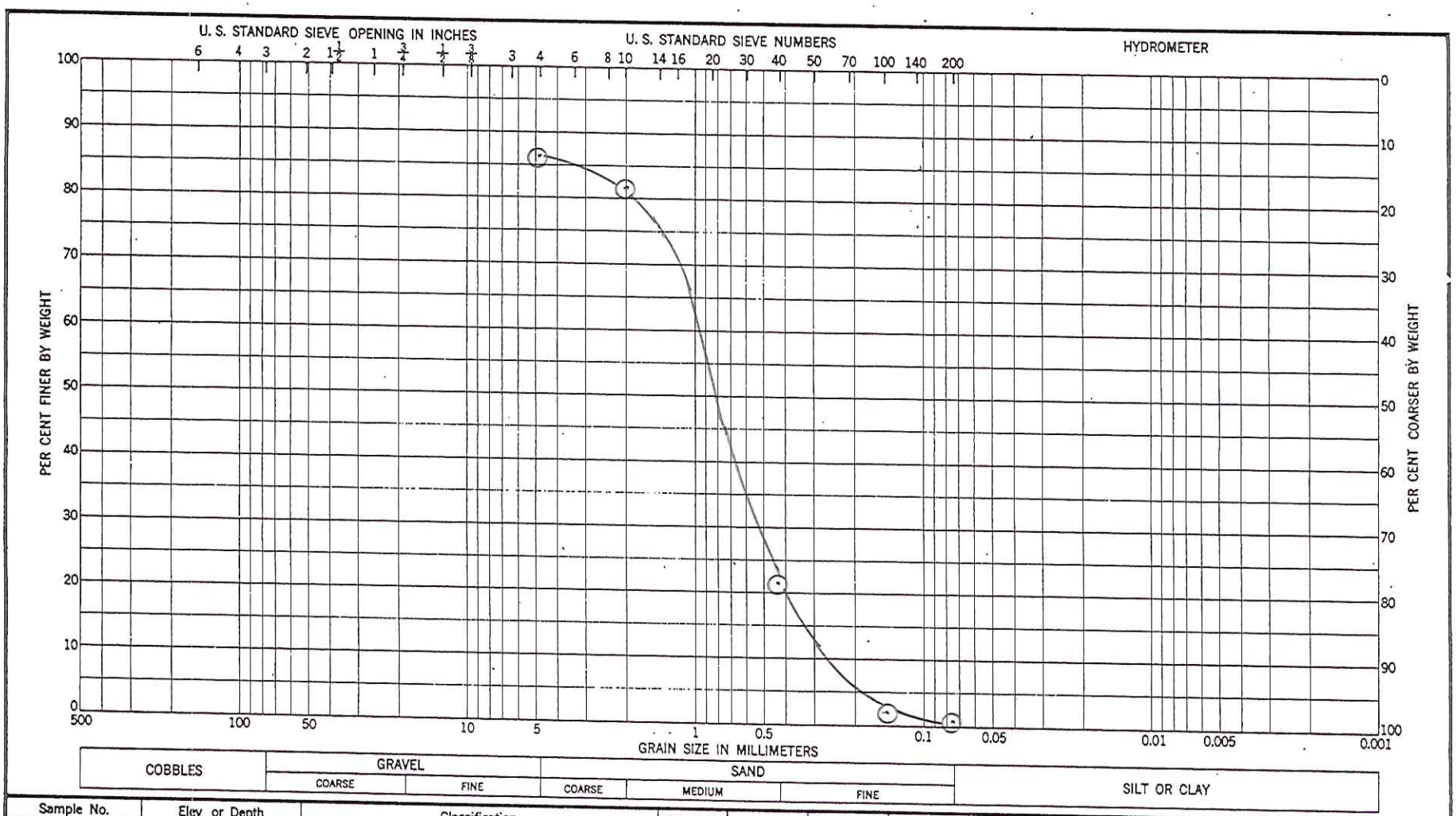
Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
B-1/SS-7	23.5'-25.0'		14.4			

GRADATION CURVES



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
B-2/SS-2	3.5' - 5.0'		6.1			

GRADATION CURVES



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
B-2/SS-4	8.5'-10.0'		19.0			

GRADATION CURVES